WASHINGTON STATE PATROL

CRIME SCENE RESPONSE TEAM
TRAINING MANUAL

CRIME LABORATORY DIVISION

April 2018

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INTRODUCTION

CRIME SCENE INVESTIGATION TRAINING PLAN

The Crime Scene Investigation Training Plan was adapted from guidelines set forth by trade associations and scientific and technical working groups established and/or sponsored by the Federal Bureau of Investigation.

Refer to WSP CLD Quality Operations Manual, Section 5 Personal Qualifications and Training

PURPOSE

To provide Trainees, Secondary, and Primary Responders on the Crime Scene Response Team (CSRT) with the necessary instruction to allow professional growth and expertise in the Crime Scene Investigation discipline.

TRAINING TO COMPETENCY OBJECTIVES

The trainee must demonstrate knowledge of required objectives by communicating an understanding of the objectives and underlying principles and by passing competency tests. The training elements and benchmarks have been established to accomplish each of the objectives.

EMPLOYEE DEVELOPMENT

The length of the training period is a highly variable matter and will be left to the determination of the trainer. Certain individuals may require less time than others, depending on experience, education, or learning ability. The training time will vary depending on the time required to enroll the trainee in the proper adjunctive training courses.

Throughout the training period, the trainee will assist with casework, only under the direct supervision of a qualified examiner to familiarize the trainee with different forms of case evidence, documentation, packaging, and applied analytical techniques.

Step One includes sections for a trainee to complete in order to be elevated to a Secondary Responder. If a trainee does not successfully complete these sections within 9 months, consideration should be given to additional training, additional time to focus on crime scene training, or termination of the trainee's assignment to the CSRT. Promotion to Secondary Responder is at the discretion of the CSRT Manager and will be dependent on the trainee's scene and/or laboratory experience.

Step Two includes sections for a Secondary Responder and should be achieved within 6 months after completion of step one. If a Secondary Responder does not successfully complete sections within the allotted time period, consideration should be given to additional training or termination of the responder's services.

Step Three is for Primary Responders and should be completed within 6 months following the completion of step two.

A Secondary Responder may be released to respond as a Primary Responder to requests that fall within the training sections completed.

All Primary Responders shall participate in continuing education to maintain competency and develop advanced knowledge and abilities. The Bureau shall make every effort to make such training available to all members of the CSRT.

STEP ONE: Module 1.0 must be completed first. Module 3.0 must be completed before taking the competency tests in Modules 9.0 and 10.0. Unless otherwise noted in the module, the remaining modules do not need to be completed in the order listed.

- 1.0 CRIME SCENE ORIENTATION
- 2.0 CONGNITIVE BIAS
- 3.0 CRIME SCENE PHOTOGRAPHY
- 4.0 SEARCHING METHODS
- 5.0 FIREARM SAFETY
- 6.0 AMMUNITION
- 7.0 COLLECTION OF FIRARMS AND AMMUNITION
- 8.0 SEROLOGY
- 9.0 LATENT PRINTS
- 10.0 RECOGNITION, DEVELOPMENT, PRESERVATION OF IMPRESSION EVIDENCE
- 11.0 RECOGNITION, DEVELOPMENT, PRESERVATION OF TRACE EVIDENCE
- 12.0 CRIME SCENE DOCUMENTATION
- 15.0 CONTROLLED SUBSTANCES AND PARAPHERNALIA
- 19.0 HIGH DEFINITION SURVEYING (Operability)

STEP TWO: Unless otherwise noted in the module, the modules do not need to be completed in the order listed. Module 21.0 must be completed after the completion of the preceding modules.

- 13.0 BLOODSTAIN PATTERN ANALYSIS
- 16.0 SHOOTING INCIDENT RECONSTRUCTION
- 17.0 DAMAGE EVIDENCE
- 18.0 RECOVERY AND PROCESSING OF HUMAN REMAINS
- 19.0 HIGH DEFINITION SURVEYING (Software)
- 20.0 CRIME SCENE REPORTS AND CASE FILE MANAGEMENT
- 21.0 COMPETENCY TEST

STEP THREE:

- 22.0 TECHNICAL REVIEW

MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS FOR LABORATORY EXAMINATION COMPLETION - **must be completed by only those that will be performing laboratory analysis of bloodstains on clothing and other items that have been submitted to the laboratory. Those performing bloodstain pattern analysis in the laboratory may do so with management approval. In addition, anyone performing bloodstain pattern analysis in the laboratory is also required to complete module 13 (Bloodstain Pattern Analysis Training)**.

RECOMMENDED FORMAL TRAINING

In some cases, formal training offered by agencies and organizations outside the WSP may substitute for all or a portion of the required training. Formal laboratory training for a part-time responder's primary functional area may also substitute for the required training. The content of the formal training shall be

reviewed by the trainer or mentor to determine which benchmarks have been met by the formal training and which training elements can be substituted.

MOOT COURT

Each case a forensic examiner analyzes has the potential of involving him/her as an expert witness in courtroom testimony. The trainee must never underrate this important aspect of the work. It is the trainer's responsibility to ensure that the trainee is thoroughly prepared for legal questioning. This can be done by a combination of mock trials, prearranged as well as impromptu question and answer sessions, pertinent literature review, and observation of courtroom testimony given by experienced examiners.

A mock trial may take place after the trainee has completed a block of this training manual and a practical examination of a mock case incorporating that block of training.

At the discretion of the Manager, a final mock trial may be incorporated to include any or all aspects of this training program and will be held subsequent to the completion of Module 21.0 COMPETENCY TEST.

TRAINER CRITERIA

The trainer shall be assigned by the CSRT Manager and will direct the trainee to all appropriate training elements and ensure that all of the objectives have been met. The CSRT Manager may also appoint a mentor in addition to a trainer. This mentor will aid the trainer in ensuring the training objectives are met. The Trainer will have the following qualifications:

Essential

Will possess the knowledge, skills, and abilities for the objectives to be achieved.

Has been accepted in court as an expert in crime scene investigation.

INSTRUCTIONS FOR THE TRAINER

The intent of the training program is to ensure that each and every trainee is provided with certain basic principles and fundamentals necessary for the complete education of a Crime Scene Investigator. All of the listed topics must be incorporated into the program. However, education and prior experience of the trainee will be used as a guide to determine the amount of time devoted to each topic. Some of the training elements within an objective will suggest an order of events and this ranking should be followed.

The trainer or the individual providing the training will document the completion of each required training module by the trainee on the designated checklist for that training objective. The Training Checklist is located at the end of each section. Training received outside the FLSB must be documented with a certificate of completion or equivalent.

The completed Training Checklists will be retained by the trainee in the appropriate sections of his/her training notebook. A copy of the completed Training Checklists will also be digitally stored on SharePoint.

The trainee will be evaluated on his/her performance during the course of the program. There should be written evaluations of the trainee's progress after each milestone is reached (secondary and primary status). Written evaluations should include:

A summation of the progress made.

An evaluation of the trainee's notebook.

An evaluation of the progress, to include:

- Problem areas, as applicable, and their solutions or proposed solutions.
- Trainee's strong points.
- Trainee's weak points and suggested remedies.
- Statement concerning trainee's overall performance.
- Upcoming plans and/or training opportunities.

Written evaluations will be in IOC format. Each IOC will become a part of the training history of the trainee and will be used to document the trainee's progress toward qualification.

Should a trainee demonstrate a deficiency which may impact successful completion of the training program, the trainer will notify the CSRT Manager and the Technical Lead within five working days.

A review of the Training Checklists and the Crime Scene Journal with the trainee throughout the training program, will enhance the trainer's ability to prepare the written evaluations, and may also give the trainee a greater sense of accomplishment. Any comments by the trainee are to be included with the evaluation. The Technical Lead is to discuss this evaluation with the trainee.

When the trainee has satisfactorily completed all training requirements, a recommendation will be made by the Technical Lead that the person be qualified to perform the specified duties of an examiner in the discipline. The CSRT Manager will then evaluate the recommendation and write an approval for specified duties. Final approval for crime scene response is given by the CLD Commander. If the trainee cannot meet the criteria expected of him\her during the period allowed for training in each of the areas, steps will be taken to effect the appropriate action.

INSTRUCTIONS FOR THE TRAINEE

The trainee is expected to keep a notebook on all work completed. The completed Training Checklists, training certificates, and the trainer's reports will also be included in the notebook. This notebook will be checked by the trainer throughout the training program.

The notebook should contain the types of tests, examinations or experiments observed and performed; notes and comments on each type of test; and the review of pertinent literature.

The trainee is expected to keep a Crime Scene Journal. The journal will include the Primary Responder's summary of each crime scene, and the trainee shall note their own activities, observations, and evaluation of the scene. The journal entry for each scene should be discussed with the Primary Responder and notes from that discussion should also be included in the journal. This journal will be checked by the trainer throughout the training program. Trainees should attempt to fill out these journal entries as soon as possible after scene processing.

ASSESSMENT OF EXPERIENCED PERSONNEL

The responsibility for assessing the degree of qualifications of newly hired personnel who have successfully completed a qualifying training program of instruction in Crime Scene Investigation shall lie with the CSRT Manager. In order to substitute for the entirety of the training specified in this manual, the qualifying course must have been formally structured, covered all appropriate facets of the stated objective, and been administered by a reputable organization (or individual). Methods of verifying the completion or prior training could include reviewing the individual's job application, personal interview, review of transcripts or prior training records, checking references, consulting with previous trainers, administering a series of practical exams, and/or written and/or oral technical exams.

Newly hired personnel shall not be considered qualified by the CLD (or appropriate designee) to begin any actual casework until they have successfully completed at least one competency test, consisting of a practical test, a technical oral examination and a final moot trial.

Once the employee has been evaluated, the CSRT Manager shall provide written approval (in IOC format) to the CLD Commander who will forward a written approval for qualification through the Standards and Accountability Section (SAS). A copy of the signed IOC shall be retained by the CSRT Manager.

1.0 CRIME SCENE ORIENTATION

1.1 OBJECTIVES

To understand the history of the Crime Scene Response Team and its mandate.

To understand the nature of Crime Scene Response Team requests.

To understand the roles and responsibilities of the Crime Scene Manager, Technical Lead, Primary Responder, Secondary Responder, and Trainee.

To understand the balance of responsibilities for part-time Crime Scene personnel.

To understand the staffing and technical capabilities of various WSP Regional Laboratories from which Crime Scene personnel respond.

To understand general regional assignments and areas or instances requiring overlapping coverage.

To become familiar with the crime scene vehicles, including operation of the vehicle and storage locations.

To understand the use and care of equipment utilized by Crime Scene personnel.

To equip the trainee with proper uniforms.

To understand the regional laboratory procedures for care and cleaning of uniforms.

To review expectations for stand-by status and callout procedures currently in use.

To understand proper protocol for arriving at crime scenes and interacting with requesting agencies.

To understand the progression of training and employee responsibility as part of the CSRT.

To clarify expectations of the trainer within the Training Plan.

1.2 METHODS OF INSTRUCTION

1.2.1 LECTURE AND DISCUSSION

1.2.2 REQUIRED READING:

CLD Quality Operations Manual

CLD Safety Manual

CLD Crime Scene Procedures Manual

CLD CSRT Training Manual

1.3 MODES OF EVALUATION

The Trainee shall begin responding to scenes and shall demonstrate an understanding of the objectives covered in this section through interview with the trainer.

MODULE 1.0 CRIME SCENE ORIENTATION CHECKLIST

Completed:

Lecture and Discussion	Date	Trainee's Initials
_____	_____	
	Date	Trainer's Initials
_____	_____	

The following readings have been completed:	Date	Trainee's Initials
CLD Quality Manual	_____	_____
CLD Operations Manual	_____	_____
CLD Safety Manual	_____	_____
CLD Crime Scene Procedures Manual	_____	_____
CLD CSRT Training Manual	_____	_____

Additional Comments: _____
_____
_____
_____

2.0 COGNITIVE BIAS

2.1 OBJECTIVES

Understand what cognitive bias is and its potential impact to the trainee's work and forensic science in general.

Understand the various tactics that can be used to minimize the influence of cognitive bias.

2.2 TOPIC AREAS

2.2.1 INTRODUCTION

Cognitive bias can play a role in all aspects of investigations, from the evidence that is collected (or not collected) at the scene, what is submitted to the lab, what is chosen to be examined, how the exam is conducted, how the data is interpreted, what conclusions are reached, how they are reported, and to how they are presented in a court of law. It is critical as scientists to: 1) remain as objective and unbiased as possible from start to finish; 2) not dilute the science with task-irrelevant information; and 3) remain free of influence from the adversarial nature of our court system. While it may be impossible to shield the scientist from all external influences, there are some ways to minimize cognitive bias. Training and understanding is the first step. Just as we take great effort to protect the evidence from physical contamination, so we must take effort to minimize cognitive contamination.

2.3 SUGGESTED READINGS

There are several articles on the FLSB Portal under the Cognitive Bias section that provide a wealth of information. Some are more pertinent to certain functional areas or categories of testing than others. Below is a list of suggested readings:

Cognitive Bias, PowerPoint presentation

Forensic Science Error Management, various links to NIST website

Cognitive forensics: human cognition, contextual information and bias, Dror, I. and Stoel, R. 2014, in the Encyclopedia of Criminology and Criminal Justice, pp. 353-363, Springer

Confirmation Bias: A Ubiquitous Phenomenon in Many Guises, Nickerson, R., 1998, Review of General Psychology, 2:2, 175-220

Are forensic experts biased by the side that retained them?. Murrie D, Boccaccini M, Guarnera L, Rufino K. 2013, Psychol. Sci. 24, 1889–1897. (doi:10.1177/0956797613481812)

National Commission on Forensic Science: Ensuring That Forensic Analysis is Based Upon Task-Relevant Information

Cognitive Bias Effects Relevant to Forensic Science Examinations, Forensic Science Regulator Guidance, FSR-G-217, Issue 1 © Crown copyright 2015

Contextual bias and cross-contamination in the forensic sciences: the corrosive implications for investigations, plea bargains, trials and appeals, Edmond, G. et al., Law, Probability and Risk (2015) 14, 1–25

Unintentional Bias in Forensic Investigation, Sophie Stammers and Sarah Bunn, Houses of Parliament, Parliamentary Office of Science and Technology, POSTbrief No. 15, October 2015

Contextual Bias: What Bloodstain Pattern Analysts Need to Know Rachel Zajac, Niki Osborne, LeeAnn Singley and Michael Taylor, Journal of Bloodstain Pattern Analysis, Vol. 31 No. 2 September 2015

2.4 STUDY QUESTIONS/PRACTICAL EXERCISES

1.0 Describe three ways that cognitive bias can be or is minimized in your casework.

2.0 Select at least one of the articles from the reading list and discuss with your trainer or section.

2.5 ASSESSMENT

Training in cognitive bias will be completed by all new employees. The material should also be reviewed by experienced staff training in this area to ensure knowledge is current.

No practical or written examination, or competency, is provided for this training section. The trainer will assess through discussion of the trainee's knowledge of the subject matter.

MODULE 2.0 COGNITIVE BIAS CHECKLIST

Completed:

Lecture and Discussion	Date	Trainee's Initials
_____	_____	

Date	Trainer's Initials
_____	_____

3.0 CRIME SCENE PHOTOGRAPHY

3.1 OBJECTIVES

Learn the functions of the crime scene camera.

Learn how adjusting the camera settings affect exposure.

Learn to set up the camera on a tripod and use the external flash.

Learn to evaluate a crime scene and determine what areas are of photographic importance.

Understand the importance of overall, midrange, and close-up photography and their correct composition.

Understand special considerations required for the photography of night scenes, Luminol/Bluestar, laser trajectories, impressions, latent prints, and evidence on mirrors and windows.

Note: Photography of impressions, latent prints, mirrors, and windows may be discussed as part of this module, but these topics are also covered in the relevant later modules of this manual. If desired, they may be performed at this time.

Learn the proper handling and storage of digital imagesand documentation of image processing.

3.2 METHODS OF INSTRUCTION

3.2.1 LECTURE, DISCUSSION, AND DEMONSTRATION (AS APPROPRIATE)

3.2.2 CASE REVIEW

Review photographs from at least five crime scenes involving vehicles, buildings, outdoor, with as much diversity of photography types as possible.

3.2.3 PROVIDE WRITTEN ANSWERS TO THE FOLLOWING QUESTIONS:

- What is depth of field?
- How do you increase the depth of field?
- What does aperture refer to?
- How can you adjust the aperture on the camera?
- What does shutter speed mean?
- How do you adjust the shutter speed on the camera?
- What is the bulb setting? When would you use this setting?
- What is ISO?
- How do you adjust ISO on the camera?
- What is the image histogram?

3.2.4 PRACTICAL EXERCISES

- Practice adjusting the camera settings to include the shutter, aperture, ISO, metering, and exposure compensation.
- Practice overall, midrange, and close-up photography.
- Practice examination quality photography.
- Practice long exposure photography and painting with light.
- Photograph a Luminol or Bluestar enhanced bloodstain.
- Photograph a laser trajectory.

3.3 MODES OF EVALUATION

3.3.1 QUESTION AND ANSWER SESSION

3.3.2 TRAINEE PHOTOGRAPHY COMPETENCY

Photograph a vehicle mock crime scene. Treat items within the vehicle as if they were items of evidence - label and document them appropriately.

Photograph an exterior mock scene with a variety of evidence. Label and document the items appropriately. Repeat this exercise at night/in low light conditions.

Trainer will evaluate trainee's competency and provide written feedback.

3.4 RECOMMENDED READING

Crime Scene camera manual

Scientific Working Group Imaging Technology (these documents can be accessed through the website, www.swgit.org)

Overview of SWGIT and the Use of Imaging Technology in the Criminal Justice System

Field Photography Equipment and Supporting Infrastructure

Guidelines and Recommendations for Training in Imaging Technologies in the Criminal Justice System

General Guidelines for Capturing Latent Impressions Using a Digital Camera

General Guidelines for Photographing Footwear and Tire Impressions

Issues Relating to Digital Image Compression and File Formats

Redsicker, David R., Forensic Photography 2nd Edition. CRC Press. 2001.

Robinson, Edward M., Crime Scene Photography 2nd edition. Amsterdam: Elsevier Incorporation. 2010.

3.5 RECOMMENDED FORMAL TRAINING

In some cases, formal training offered by agencies and organizations outside the WSP may substitute for the required training. The content of the formal training shall be reviewed by the trainer to determine which objectives have been met.

MODULE 3.0 CRIME SCENE PHOTOGRAPHY CHECKLIST

Completed:

Lecture, Discussion, and Demonstration	Date	Trainee's Initials
_____	_____	
	Date	Trainer's Initials
	_____	_____
Review photographs from at least five crime scenes	_____	_____

Case #1: _____

Case #2: _____

Case #3: _____

Case #4: _____

Case #5 _____

Record written answers questions in training book	_____	_____

The following exercises have been completed:	Date	Trainee's Initials
Practice adjusting camera settings	_____	_____
Practice overall, midrange, and close-up photography	_____	_____
Practice examination quality photography	_____	_____
Practice long exposure photography and painting with light.	_____	_____
Photograph a Luminol or Bluestar enhanced bloodstain	_____	_____
Photograph a laser trajectory	_____	_____

Evaluation Completed:

Question and answer session

Date_____ Trainee's Initials_____

Date_____ Trainer's Initials_____

Trainee Photography Competency

Vehicle:

Date_____ Trainee's Initials_____

Date_____ Trainer's Initials_____

Outdoor Scene:

Date_____ Trainee's Initials_____

Date_____ Trainer's Initials_____

Outdoor Scene at Night:

Date_____ Trainee's Initials_____

Date_____ Trainer's Initials_____

Additional Comments:_____

_____

_____

_____

4.0 SEARCHING METHODS

4.1 OBJECTIVES

To become familiar with the search techniques that may be used during a crime scene search

4.2 METHODS OF INSTRUCTION

4.2.1 LECTURE AND DISCUSSION

4.2.2 REQUIRED READING

Fisher, Barry A. J., Techniques of Crime Scene Investigation, 8th edition, CRC Press, 2012; 81-84

4.3 MODES OF EVALUATION

Question and answer session.

MODULE 4.0 SEARCHING METHODS CHECKLIST

Completed:

Lecture and Discussion

Date_____ Trainee's Initials_____

Date_____ Trainer's Initials_____

The following reading have been completed:	Date	Trainee's Initials
Fisher, Barry A. J., Techniques of Crime Scene Investigation, 8th edition, CRC Press, 2012; 81-84	_____	_____

Completed a question and answer session

Date_____ Trainee's Initials_____

Date_____ Trainer's Initials_____

Additional Comments:_____

_____

_____

_____

5.0 FIREARMS SAFETY

5.1 OBJECTIVES

To be able to safely unload a firearm and demonstrate that the firearm is safe for packaging.

To have a basic understanding of the different types of external safeties of a firearm.

To understand the different types of firearms.

5.2 METHODS OF INSTRUCTION

5.2.1 LECTURE AND DISCUSSION

The lecture and discussion will include a Firearm Safety PowerPoint and/or attend a Firearms Safety course taught by the WSP CLD Firearms Unit. (Firearms/Toolmarks Training Material)

Review references and resource material in the Firearms Unit.

Association of Firearms and Tool Mark Examiners (AFTE) Glossary

5.2.2 EVALUATION/ASSIGNMENT

Working with an experienced Firearms examiner, discuss the main types of firearms and how they are to be rendered safe. Discuss the proper ways of securing the firearm to demonstrate that it is safe. It is also recommended the trainee have a basic understanding of the cycle-of-fire for the following firearms:

- Semiautomatic pistol/rifle
- Revolver
- Bolt-action rifle
- Pump-action shotgun/rifle
- Lever-action rifle
- Automatic firearms
- Electronic Control Devices (TASER)
- Pellet/BB guns

Working with an experienced Firearms examiner, discuss safety rules regarding the handling of firearms. Also discuss the ways in which a firearm could accidentally and unintentionally discharge.

Working with an experienced Firearms examiner, load, unload and secure one of each type of firearms listed above. It is recommended that the trainee test fire each type of firearm to understand their function.

Complete Training Assignment 11 of the Firearms Training Manual.

Discuss with the trainer the types of evidence that might be associated with firearms.

5.3 MODES OF EVALUATION

Review the assignments

Question and answer session

MODULE 5.0 FIREARMS SAFETY CHECKLIST

Completed:

Lecture and Discussion	Date	Trainee's Initials
	_____	_____
	Date	Trainer's Initials
	_____	_____

The following reference has been reviewed:

AFTE Glossary (most current addition)	Date	Trainee's Initials
	_____	_____

The following assignments have been completed:

Discussion of main types of firearms and how to render them safe	_____	_____
Discuss safety rules	_____	_____
Load, unload, and secure firearms	_____	_____
Training Assignment 11 from Firearms Manual	_____	_____

The following have been completed:

Review the assignments	Date	Trainer's Initials
	_____	_____
Question and answer session	Date	Trainee's Initials
	_____	_____
	Date	Trainer's Initials
	_____	_____

Additional Comments:_____

_____

_____

_____

6.0 AMMUNITION

6.1 OBJECTIVES

To have a basic understanding of ammunition components.

To be able to recognize fired and unfired ammunition and its components

6.2 METHODS OF INSTRUCTION

6.2.1 LECTURE AND DISCUSSION

Discuss with an experienced Firearm examiner the headstamp information on ammunition and how to properly document it.

Discuss the types of evidence that might be associated with ammunition components with the trainer.

Discuss with an experienced Firearms examiner the TASER cartridge components

6.2.2 REVIEW STANDARD AMMUNITION FILE IN THE FIREARMS UNIT

6.2.3 SUGGESTED READING

AFTE glossary, most current edition

Cartridges of the World, most current edition

Manufacturer reference material

Headstamp Guide, AFTE website

CartWin Pro database

NRA Sourcebook

6.2.4 EXERCISE

Define the following terms and discuss with the trainer: cartridge, cartridge case, primer, shotshell, mouth, head, headstamp, gauge, wadding, bullet, round-nosed bullet, “hollow-point” bullet, and jacketed bullet, bullet core, bullet jacket fragment.

6.3 MODES OF EVALUATION

Review of assignments

Question and answer session

MODULE 6.0 AMMUNITION CHECKLIST

Completed:

	Date	Trainee's Initials
Lecture and discussion	_____	_____
	Date	Trainer's Initials
	_____	_____
Review Standard Ammunition File	Date	Trainee's Initials
	_____	_____

	Date	Trainee's Initials
The following assignment has been completed:		
Training Exercise _____	_____	

	Date	Trainer's Initials
The assignment has been reviewed _____ _____		

	Date	Trainee's Initial
Question and answer session	_____	_____
	Date	Trainer's Initials
	_____	_____

Additional Comments:_____
_____
_____
_____

7.0 COLLECTION OF FIREARMS AND AMMUNITION

Successful completion of Module 5 is required before beginning this module

7.1 OBJECTIVES

To have an understanding of the proper documentation of firearms and ammunition.

To be able properly package firearms and ammunition.

7.2 METHODS OF INSTRUCTION

7.2.1 LECTURE AND DISCUSSION

Discuss with the trainer and/or an experienced Firearms examiner the markings present on several firearms in the firearms reference collection.

Discuss with the trainer why documenting by pictures and notes is recommended for a firearm prior to movement and securing of the firearm.

Discuss with the trainer the documentation and packaging of ammunition loaded in a firearm, and TASER.

7.3 MODES OF EVALUATION

Review of assignments

Demonstrate to the trainer the securing and packaging of a loaded firearm, and TASER

Question and answer session

MODULE 7.0 COLLECTION OF FIREARMS AND AMMUNITION CHECKLIST

Completed:

Lecture and Discussion	Date _____	Trainee's Initials _____
	Date _____	Trainer's Initials _____

Additional Comments:_____
_____
_____
_____

8.0 SEROLOGY/DNA

8.1 FORENSIC/ALTERNATE LIGHT SOURCE (FLS/ALS)

8.1.1 OBJECTIVES

To become familiar with the proper use of the ALS for examining evidence for the presence of biological material and its use to search for or examine other types of evidence (i.e. Trace and latent prints).

To be able to operate the ALS safely to locate possible biological material

8.2 METHODS OF INSTRUCTION

8.2.1 LECTURE AND DISCUSSION

- Safety and operation of the ALS
- Appropriate wavelengths and filters
- Procedure for examination of evidence
- Materials that fluoresce
- Documentation of examination
- Interpretation and conclusions.

8.2.2 SUGGESTED READING

- CLD Biochemical Analysis Procedures Module 2
- CLD Material Analysis Technical Procedures Module 11
- User's Manual for ALS (unit specific)

8.2.3 EXERCISES

Examine a variety of known and unknown materials from biological, chemical, and physical sources, to become familiar with the range of materials that may be encountered at a crime scene. These substances should be examined on various substrates.

8.3 MODES OF EVALUATION

The trainer will assess, through discussion, the trainee's knowledge of the subject areas as per the goals stated above and document using the checklist.

DETECTION OF BLOOD

8.4 OBJECTIVES

To become familiar and comfortable with searching for potential bloodstains

To become familiar with the accepted protocols for the presumptive and confirmatory testing for the presence of blood

To successfully:

- Test stains using proper procedures for Phenolphthalein, Leucocrystal Violet (LCV), Luminol, BlueStar® (if available) and HemaTrace® tests
- Interpret test results and draw appropriate conclusions

- Know the advantages/disadvantages of using a specific test and be able to appropriately pick a test for a specific situation

Be familiar with the potential impact of presumptive blood tests on subsequent testing (e.g. DNA analysis)

Be familiar with other presumptive testing methods

Know the components of blood and their functions.

8.5 METHODS OF INSTRUCTION

Instruction, demonstration, and practical training in techniques for searching for bloodstains on various substrates:

- Bright lights
- Oblique lighting
- Infrared
- Magnification
- General swabs/sprays
- Fresh, aged, and treated bloodstain appearance
- Bloodstains mixed with other fluids
- Discussion of serum separated bloodstains
- Apparent biological tissue blood testing results

Instruction, demonstration, and practical training for each test currently in use by the CSRT (Phenolphthalein, LCV, Luminol, BlueStar® (if available), HemaTrace®):

- Safety
- Physical and chemical characteristics of blood
- Components of blood and their function
- Visual appearance
- Effects of degradation and aging
- Reagent Preparation
- Biochemical basis, procedure, and value of test
- Stock and working solutions
- Quality control testing of reagents and documentation
- Interpretation and conclusions
- False positives
- False negatives
- Sensitivity

8.5.1 SUGGESTED READING

CLD Biochemical Analysis Procedures

Abacus HemaTrace® Technical Information Sheet, ABAcard, HemaTrace

for the Forensic Identification of Human Blood. Abacus Diagnostics, Inc; 2005

BlueStar© Package Insert

Blake and Dillon, "Microorganisms and the Presumptive Tests for Blood," Journal of Police Science Administration, Vol. 1, #4, Dec. 1973

Cox, M., "Effect of Fabric Washing on the Presumptive Identification of Bloodstains", Journal of Forensic Sciences, Vol. 35, #6, November 1990, pp. 1335-1341

Cox, M. "A Study of the Sensitivity and Specificity of Four Presumptive Tests for Blood", Journal of Forensic Sciences, Vol. 36, #5, September 1991, pp. 1503-1511

Gaensslen, R.E. 1983. Sourcebook in Forensic Serology, Immunology and Biochemistry. Washington, D.C. U.S. Department of Justice. 85-87, 101-116

Lee HC. Identification and Grouping of Bloodstains. In: Saferstein (ed.), Forensic Science Handbook. Englewood Cliffs: Prentice Hall; 1982; 272-279

Higaki RS & Philp WM. A Study of the Sensitivity, Stability and Specificity of Phenolphthalein as an Indicator for Blood. Canadian Society of Forensic Science Journal, 1971;9(3):97-102.

8.5.2 EXERCISES

Practice testing known blood samples using the following: PHT, LCV, Luminol/Bluestar, and HemaTrace®. Test known false positive samples (i.e. rust, plant materials).

8.6 MODES OF EVALUATION

COMPETENCY TESTING: A minimum of ten correctly characterized stains. HemaTrace testing of at least two stains will be incorporated in the competency test.

The trainer will assess, through discussion, the trainee's knowledge of the subject areas as per the goals stated above.

DETECTION OF SEMEN

8.7 OBJECTIVES

To become familiar with the accepted protocols for the presumptive identification of semen

At the end of this module, the trainee should be able to successfully:

- Describe the physical and chemical characteristics of semen
- Test evidence items either directly or with a mapping technique to determine the location of possible semen stains by detecting acid phosphatase (AP)

8.7.1 METHODS OF INSTRUCTION

Instruction, demonstration, and practical training:

- Physical and chemical characteristics of semen
- Components of semen
- Persistence of semen

Acid Phosphatase:

- Reagent Preparation
- Quality Control testing of reagents and documentation

- Mapping
- Sample swabbing and/or evidence swab testing
- Biochemistry of reaction; time to color development
- Interpretation and conclusions
- False positives

8.7.2 SUGGESTED READING

CLD Biochemical Analysis Procedures

Baechtel F. The Identification and Individualization of Semen Stains. In: Saferstein (ed.), Forensic Science Handbook, vol. 2. Englewood Cliffs: Prentice Hall; 1988: 347-68.

Gaensslen, R.E. 1983. Sourcebook in Forensic Serology, Immunology and Biochemistry. Washington, D.C. U.S. Department of Justice. 155-69.

Joshi et. al., "Effect of Water Immersion on Seminal Stains on Cotton Cloth", Forensic Science International, Vol. 17, #1, January-February 1981, pp. 9-11.

Kafarowshi et. al., "The Retention and Transfer of Spermatozoa in Clothing by Washing Machine", Canadian Society of Forensic Science Journal, Vol. 29, #1, 1996, pp. 7-11.

8.7.3 EXERCISES

Test a variety of substrates with a variety of stains (e.g., semen, urine, vaginal secretions, etc.) using a combination of ALS and acid phosphatase reagent (spot test and mapping), as appropriate. Use different dilutions and mixtures of body fluids in the above testing

8.8 MODES OF EVALUATION

COMPETENCY TESTING: A minimum of ten correctly characterized stains

The trainer will assess, through discussion, the trainee's knowledge of the subject areas as per the goals stated above.

COLLECTION AND PRESERVATION OF DNA EVIDENCE

8.9 OBJECTIVES

To become familiar with the capabilities of the Crime Laboratory DNA section

To be able to successfully collect samples intended for DNA analysis using proper techniques

8.10 METHODS OF INSTRUCTION

Instruction, demonstration, and practical training:

- Evidence packaging and storage conditions
- Cleanliness of instruments and contamination risks
- Documentation of examination
- Potential sources of DNA and concentration of DNA in each (biological fluid, cellular-touch/wearer, etc.)
- Sample collection techniques
- Degradation of DNA

8.10.1 SUGGESTED READING

FLSB Forensic Services Guide

CLD Biochemical Analysis Procedures

8.10.2 EXERCISES

Practice sample collection techniques of visible and non-visible stains and cellular samples from various substrates

8.11 MODES OF EVALUATION

The trainer will assess, through discussion, the trainee's knowledge of the subject areas as per the goals stated above.

MODULE 8.0 SEROLOGY/DNA CHECKLIST

FORENSIC/ALTERNATIVE LIGHT SOURCE

Completed:

Lecture and Discussion	Date _____	Trainee's Initials _____
	Date _____	Trainer's Initials _____
User's Manual for ALS (unit specific)	_____	_____

The following exercise has been completed:

Examine a variety of known and unknown materials from biological, chemical, and physical sources, to become familiar with the range of materials that may be encountered at a crime scene. These substances should be examined on various substrates.

Date	Trainee's Initials
_____	_____

The trainer has assessed the trainee's knowledge through discussion and the review of the trainee's notebook

	Date _____	Trainer's Initials _____

Additional Comments:_____
_____
_____
_____

MODULE 8.0 SEROLOGY/DNA CHECKLIST

BLOOD DETECTION

Completed instruction, demonstration, and practical training in the following:

Techniques for searching for bloodstains on various substrates:

Date	Trainee's Initials
_____	_____
Date	Trainer's Initials
_____	_____

The commonly used tests (Phenolphthalein, LCV, Luminol, and BlueStar©):

Date	Trainee's Initials
_____	_____
Date	Trainer's Initials
_____	_____

The use of the HemaTrace® test

Date	Trainee's Initials
_____	_____
Date	Trainer's Initials
_____	_____

MODULE 8.0 SEROLOGY/DNA CHECKLIST

BLOOD DETECTION

The following exercise has been completed:

Practice testing known blood samples using the following: PHT, LCV, Luminol/Bluestar, and HemaTrace®. Test known false positive samples (i.e. rust, plant materials).

Date _____ Trainee's Initials _____

Prepare serial dilutions and laundered stains and test with commonly used reagents.

Date _____ Trainee's Initials _____

The trainer has assessed the trainee's knowledge through discussion and the review of the trainee's notebook

Date _____ Trainer's Initials _____

BLOOD DETECTION COMPETENCY

A minimum of ten stains have been correctly characterized

Date _____ Trainee's Initials _____

Date _____ Trainer's Initials _____

Additional Comments:_____

_____

_____

_____

MODULE 8.0 SEROLOGY/DNA CHECKLIST

DETECTION OF SEMEN

Completed instruction, demonstration, and practical training in the following:

Physical and chemical characteristics of semen, components of semen, typical volume of ejaculate, and the persistence of semen

Date	Trainee's Initials		
		_____	_____
		Date	Trainer's Initials
		_____	_____

Acid Phosphatase:

Date	Trainee's Initials		
		_____	_____
		Date	Trainer's Initials
		_____	_____

MODULE 8.0 SEROLOGY/DNA CHECKLIST

DETECTION OF SEMEN

The following exercise has been completed:

Test a variety of substrates with a variety of stains (e.g., semen, urine, vaginal secretions, etc.) using a combination of ALS and acid phosphatase reagent (spot test and mapping), as appropriate. Use different dilutions and mixtures of body fluids in the above testing

Date _____ Trainee's Initials _____

The trainer has assessed of the trainee's knowledge through discussion and the review of the trainee's notebook

Date _____ Trainer's Initials _____

DETECTION OF SEMEN COMPETENCY

A minimum of ten stains have been correctly characterized

Date _____ Trainee's Initials _____

Date _____ Trainer's Initials _____

Additional Comments:_____

_____

_____

_____

MODULE 8.0 SEROLOGY/DNA CHECKLIST

COLLECTION AND PRESERVATION OF DNA EVIDNECE

Completed instruction, demonstration, and practical training in the following:

Evidence packaging and storage condition, cleanliness, contamination risks, documentation, sources of DNA, sample collection, and degradation of DNA.

Date Trainee's Initials

_____ _____

Date Trainer's Initials

_____ _____

The trainer has assessed of the trainee's knowledge through discussion and the review of the trainee's notebook

Date Trainer's Initials

_____ _____

Additional Comments:_____

_____

_____

_____

9.0 LATENT PRINTS

9.1 RECOMMENDED FORMAL TRAINING

In some cases, formal training offered by agencies and organizations outside the WSP may substitute for the required training. The content of the formal training shall be reviewed by the trainer to determine which objectives have been met.

9.2 RECOGNIZED FORMAL TRAINING:

- Latent Print Techniques- California Criminalistics Institute
- Latent Print Photography- FBI

9.3 EMPLOYEE DEVELOPMENT MILESTONES

9.4 PRINCIPLES AND FOUNDATIONS

Friction ridge skin development, history, and methodology

9.5 LATENT PRINT DETECTION AND PROCESSING

Surface evaluation, cyanoacrylate, powder processing

LATENT PRINT PRESERVATION

Photography principles, processing documentation

9.6 OBJECTIVE

To provide the trainee with the necessary instruction to allow professional growth and expertise in the latent prints discipline.

The trainee must demonstrate knowledge of required objectives by passing written tests and/or practical exercises, and by communicating an understanding of objectives and underlying principles.

PRINCIPLES AND FOUNDATIONS

9.7 OBJECTIVES

Knowledge of the history of fingerprints

Understand the biology and physiology of friction ridge skin

An understanding of latent print residue

Understand the use of fingerprints, palmprints, and footprints in criminal and civil applications

9.8 METHODS OF INSTRUCTION

9.8.1 REQUIRED READING

Ashbaugh, D. R., 1999, *Quantitative-Qualitative Friction Ridge Analysis*, CRC Press, Boca Raton, FL, p. 1-86.

Champod, C., Lennard, C., Margot, P., and Stoilovic, M., *Fingerprints and Other Ridge Skin Impressions*, CRC Press, Boca Raton, FL, p. 1-14.

Lee, H. C., and Gaensslen, R. E., *Advances in Fingerprint Technology*, CRC Press, Boca Raton, FL, p. 1-40.

Lee, H. C., and Gaensslen, R. E., *Advances in Fingerprint Technology*, CRC Press, Boca Raton, FL, p. 63-104.

Olsen, Sr. R. R., *Scott's Fingerprint Mechanics*, Thompson Books, Springfield, IL, p. 111-151.

Babbler, W. J., 1991, Embryological Development of Epidermal Ridges and Their Configuration, *March of Dimes Birth Defects Foundation*, v. 27, p. 95-112.

9.9 MODES OF EVALUATION

9.9.1 DISCUSSION

Define the three basic fingerprint patterns.

Define a Latent, Patent, and Plastic friction ridge impression.

9.9.2 ASSESSMENT

Complete review questions from *Scott's Fingerprint Mechanics* on p. 151-155

LATENT PRINT DETECTION AND PROCESSING

9.10 OBJECTIVES

An understanding of latent print detection methods

An understanding of latent print detection sequences

An understanding of the use and forms of cyanoacrylate

An ability to fume evidence with cyanoacrylate

An ability to develop latent prints using various types of fingerprint powders

An ability to develop latent prints on various surfaces

9.11 METHODS OF INSTRUCTION

9.11.1 REQUIRED READING

Home Office Scientific Development Branch, Manual of Fingerprint Development Techniques: A Guide to the Selection and Use of Processes for the Development of Latent Fingerprints, Sandridge, ENG.

Lee, H. C., and Gaensslen, R. E., Advances in Fingerprint Technology, CRC Press, Boca Raton, FL, p. 105-159.

Champod, C., Lennard, C., Margot, P., and Stoilovic, M., Fingerprints and Other Ridge Skin Impressions, CRC Press, Boca Raton, FL, p. 105-180.

Champod, C., Lennard, C., Margot, P., and Stoilovic, M., Fingerprints and Other Ridge Skin Impressions, CRC Press, Boca Raton, FL, p. 217-226.

Olsen, Sr. R. R., *Scott's Fingerprint Mechanics*, Thompson Books, Springfield, IL, p. 161-240.

9.12 MODES OF EVALUATION

Define the difference between physical and chemical processing techniques and how each category might be utilized at a crime scene

Explain the appropriate use of the following physical latent print processing supplies:

- Conventional Black powder
- Conventional White powder
- Dual contrast (Bi-Chromatic) powder
- Fluorescent powder
- Fiberglass brush
- Magnetic wand

Discuss with trainer the following chemical latent print processing techniques and their application to different types of evidence; including pros and cons of various techniques

- Cyanoacrylate (fuming wand, Hard Evidence packs, and Hot Shots)
- Small Particle Reagent
- Amido Black

Discuss situations in which it is appropriate to use cyanoacrylate.

Complete review questions from *Scott's Fingerprint Mechanics* on p. 202-205

Complete review questions from *Scott's Fingerprint Mechanics* on p. 235-239

Demonstrate cyanoacrylate fuming methods

- Butane fuming wand
- Hard Evidence pack
- Hot shot

Demonstrate the application of various fingerprint powders

- Conventional
- Magnetic
- Fluorescent

Using appropriate development techniques, process the following items for latent prints (Remembering to demonstrate the use of positive and negative controls)

- Aluminum can
- Glass bottle
- Plastic bottle
- Plastic bags
- Painted wood
- Mirror
- Vehicle exterior
- Vehicle interior
- Paper (glossy and semi-glossy coated)
- Bloody print on a wall
- Curved Surface

LATENT PRINT PRESERVATION AND DOCUMENTATION

9.13 OBJECTIVES

An understanding of photography principles

An ability to use available photography equipment for preservation of latent impressions

An ability to capture, preserve, and document latent prints.

9.14 METHODS OF INSTRUCTION

9.14.1 READ THE FOLLOWING

Olsen, Sr. R. R., *Scott's Fingerprint Mechanics*, Thompson Books, Springfield, IL, p. 369-400.

King, J. A., *Digital Photography for Dummies*, Wiley Publishing Inc., Hoboken, NJ

9.15 MODES OF EVALUATION

Explain the appropriate use of the following physical latent print processing supplies:

- Lifting tapes (frosted, clear, gel, and rubber)
- Lift cards and sheet protectors

Discuss and demonstrate the documentation requirements of observed, developed, and preserved latent prints.

Complete review questions from *Scott's Fingerprint Mechanics* on p. 395-398

Document impressions developed on items processed in section 9.12

Photograph impressions developed on items processed in section 9.12

Lift impressions developed on items processed in section 9.12

9.16 COMPETENCY TESTING

Process the exterior of a vehicle for latent prints. You must document, photograph (including exam quality photographs), and collect the developed impressions.

Develop several prints in blood on a variety of surfaces using amido black.

MODULE 9.0 LATENT PRINT CHECKLIST

PRINCIPLES AND FOUNDATIONS

The following reading have been completed:	Date	Trainee's Initials
Ashbaugh, D. R., 1999, *Quantitative-Qualitative Friction Ridge Analysis*, CRC Press, Boca Raton, FL, p. 1-86.	_____	_____
Champod, C., Lennard, C., Margot, P., and Stoilovic, M., *Fingerprints and Other Ridge Skin Impressions*, CRC Press, Boca Raton, FL, p. 1-14.	_____	_____
Lee, H. C., and Gaensslen, R. E., *Advances in Fingerprint Technology*, CRC Press, Boca Raton, FL, p. 1-40.	_____	_____
Lee, H. C., and Gaensslen, R. E., *Advances in Fingerprint Technology*, CRC Press, Boca Raton, FL, p. 63-104.	_____	_____
Olsen, Sr. R. R., *Scott's Fingerprint Mechanics*, Thompson Books, Springfield, IL, p. 111-151.	_____	_____
Babbler, W. J., 1991, Embryological Development of Epidermal Ridges and Their Configuration, *March of Dimes Birth Defects Foundation*, v. 27, p. 95-112.	_____	_____

The following have been discussed:
Three basic fingerprint patterns
Definitions of a latent, patent, and plastic friction ridge impression

Date	Trainee's Initials
_____	_____
Date	Trainer's Initials
_____	_____

The following assignment has been completed by the Trainee and has been reviewed by the Trainer:
Review questions from *Scott's Fingerprint Mechanics* on p. 151-155

Date	Trainee's Initials
_____	_____
Date	Trainer's Initials
_____	_____

Additional Comments:_____

_____

_____

_____

MODULE 9.0 LATENT PRINT CHECKLIST

LATENT PRINT DETECTION AND PROCESSING

The following reading have been completed:	Date	Trainee's Initials
Home Office Scientific Development Branch, *Manual of Fingerprint Development Techniques: A Guide to the Selection and Use of Processes for the Development of Latent Fingerprints*, Sandridge, ENG.	_____	_____
Lee, H. C., and Gaensslen, R. E., *Advances in Fingerprint Technology*, CRC Press, Boca Raton, FL, p. 105-159.	_____	_____
Champod, C., Lennard, C., Margot, P., and Stoilovic, M., *Fingerprints and Other Ridge Skin Impressions*, CRC Press, Boca Raton, FL, p. 105-180.	_____	_____
Champod, C., Lennard, C., Margot, P., and Stoilovic, M., *Fingerprints and Other Ridge Skin Impressions*, CRC Press, Boca Raton, FL, p. 217-226.	_____	_____
Olsen, Sr. R. R., *Scott's Fingerprint Mechanics*,Thompson Books, Springfield, IL, p. 161-240.	_____	_____

The following have been discussed:

Difference between physical and chemical processing techniques and how each category might be utilized

The appropriate use of physical latent print processing supplies

The chemical latent print processing techniques and their application to different types of evidence including pros and cons of various techniques:

Cyanoacrylate (fuming wand, hard evidence pack, and Hot Shots), Small Particle Reagent, Amido Black	Date	Trainee's Initials
	_____	_____
	Date	Trainer's Initials
	_____	_____

The following assignment has been completed by the Trainee and has been reviewed by the Trainer:

Review questions from *Scott's Fingerprint Mechanics* on p. 202-205.

Review questions from *Scott's Fingerprint Mechanics* on p. 235-239.

	Date	Trainee's Initials
	_____	_____
	Date	Trainer's Initials
	_____	_____

MODULE 9.0 LATENT PRINT CHECKLIST

LATENT PRINT DETECTION AND PROCESSING

The following methods have been demonstrated by the Trainee to the Trainer:

Cyanoacrylate fuming methods:	Date	Trainer's Initials
Butane fuming wand	_____	_____
Hard Evidence pack	_____	_____
Hot shot	_____	_____

The application of various fingerprint powders	Date	Trainer's Initials
Conventional	_____	_____
Magnetic	_____	_____
Fluorescent	_____	_____

Latent print processing of the items:	Date	Trainer's Initials
Aluminum can	_____	_____
Glass bottle	_____	_____
Plastic bottle	_____	_____
Plastic bags	_____	_____
Painted wood	_____	_____
Mirror	_____	_____
Vehicle exterior	_____	_____
Vehicle interior	_____	_____
Paper (glossy and semi-glossy coated)	_____	_____
Bloody print on a wall	_____	_____
Curved Surface	_____	_____

Additional Comments:_____

_____

_____

_____

MODULE 9.0 LATENT PRINT CHECKLIST

LATENT PRINT PRESERVATION AND DOCUMENTATION

The following reading have been completed:	Date	Trainee's Initials
Olsen, Sr. R. R., *Scott's Fingerprint Mechanics*, Thompson Books, Springfield, IL, p. 369-400.	_____	_____
King, J. A., *Digital Photography for Dummies*, Wiley Publishing Inc., Hoboken, NJ	_____	_____

The appropriate use for the following were discussed	Date	Trainee Initials
Lifting tapes (frosted, clear, gel, and rubber) Lift cards and sheet protectors	_____	_____
	Date	Trainer's Initials
	_____	_____

The following were discussed and demonstrated to the trainee:	Date	Trainer's Initials
Documentation of observed, developed, and preserved latent prints	_____	_____

The following assignment has been completed by the Trainee and has been reviewed by the Trainer:

Review questions from *Scott's Fingerprint Mechanics* on p. 395-398	Date	Trainee's Initials
	_____	_____
	Date	Trainer's Initials
	_____	_____

Document , photograph , and lift the impressions developed on items processed in section 9.12	Date	Trainee's Initials
	_____	_____
	Date	Trainer's Initials
	_____	_____

Module 9 competency:

Date_____ Trainee's Initials_____

Date_____ Trainer's Initials_____

MODULE 9.0 LATENT PRINT CHECKLIST

Additional Comments:_____

_____

_____

_____

10.0 RECOGNITION, DOCUMENTATION, AND PRESERVATION OF IMPRESSION EVIDENCE

10.1 OBJECTIVES

To become familiar with the recognition and documentation of two- and three- dimensional impressions.

To become familiar with the recognition, documentation, and recovery of tool marks.

To become familiar with the collection of footwear and tire tread exemplars.

10.2 METHODS OF INSTRUCTION

10.2.1 LECTURE AND DISCUSSION

10.2.2 PRACTICAL EXERCISES

Photograph a footwear impression in both blood and dust.

Lift a dusty footwear impression using the Electrostatic Dustprint Lifter (EDL).

Lift an appropriate footwear impression with both gel and adhesive lifts.

Photograph a footwear or tire impression in soil and/or snow.

Cast a footwear or tire impression in soil.

Cast a footwear or tire impression in snow. If snow is not available, use a tray filled with crush ice.

Cast a footwear or tire impression filled with water.

Photograph and cast three toolmarks in three different substrates.

Collect a footwear exemplar using both the inkless pad and magnetic powder techniques.

Collect a set of front or rear tire exemplars.

10.2.3 SUGGESTED READING

Fisher, Barry A. J., Techniques of Crime Scene Investigation, 7th edition, CRC Press, 2004; 221-240

Bodziak, William J., Footwear Impression Evidence, 2nd Edition, CRC Press, 2000; 1-25 crime scene; 38-58 photos; 59-88 casting ; 104-112 ELD; 116-122 gel lifts

Hilderbrand, Dwane S., Footwear, The Missed Evidence, Staggs Publishing, 1999; 31-52 crime scene & photography; 53-55 &58-62 lifting; 63-74 casting

Bodziak, William J., Tire Tread and Tire Track Evidence, CRC Press, 2008;1-22 tire info; 23-43 track evidence; 45-91 recovering tire impression evidence; 110-118 exemplars

10.3 COMPETENCY TESTING

Document, photograph (including exam quality photographs), and collect a footwear impression in soil and dust, a tire impression in soil, and a tool mark impression.

Collect at least one tire and one footwear exemplar.

MODULE 10.0 RECOGNITION, DOCUMENTATION, AND PRESERVATION OF IMPRESSION EVIDENCE CHECKLIST

Lecture and Discussion Completed	Date	Trainee's Initials
	_____	_____
	Date	Trainer's Initials
	_____	_____

The following exercises have been completed:

	Date	Trainee's Initials
Photograph a blood and a dust footwear impression.	_____	_____
Lift a dusty footwear impression using the Electrostatic Dustprint Lifter (EDL).	_____	_____
Lift an appropriate footwear impression with both gel and adhesive lifts.	_____	_____
Photograph a footwear or tire impression in soil and/or snow.	_____	_____
Cast a footwear or tire impression in soil.	_____	_____
Cast a footwear or tire impression in snow. If snow is not available, use a tray filled with crush ice.	_____	_____
Cast a footwear or tire impression filled with water.	_____	_____
Photograph and cast three toolmarks in three different substrates.	_____	_____
Collect a footwear exemplar using both the inkless pad and magnetic powder techniques.	_____	_____
Collect a set of front or rear tire exemplars.	_____	_____

The Trainer has reviewed the above exercises

Date_____ Initials_____

Module 10 competency:

Date_____ Trainee's Initials_____

Date_____ Trainer's Initials_____

MODULE 10.0 RECOGNITION, DOCUMENTATION, AND PRESERVATION OF IMPRESSION EVIDENCE CHECKLIST

Additional Comments:_____

_____

_____

_____

11.0 RECOGNITION, COLLECTION, AND PRESERVATION OF TRACE EVIDENCE

11.1 OBJECTIVE

To become familiar with the recognition, documentation, and collection of trace materials from various substrates

11.2 METHODS OF INSTRUCTION

11.2.1 LECTURE AND DISCUSSION

11.2.2 PRACTICAL EXERCISES COLLECT LOOSE AND/OR FRAGILE EVIDENCE FROM A CLOTHING ITEM AS FOLLOWS:

- Properly package a loose hair or fiber.
- Properly package loose paint chips or glass fragments.
- Tape lift the item
- Properly package the item to preserve remaining in situ trace evidence.

11.2.3 SUGGESTED READING

Fisher, Barry A. J., Techniques of Crime Scene Investigation, 7th edition, CRC Press, 2004; 149-192

Scott, H. The persistence of fibers transferred during contact of automobile carpets and clothing fabrics, Can Soc For Sci 1985;18(4): 185-199.

Houck, M. Mute Witnesses: Trace Evidence Analysis, Academic Press (2001), xi-xxxi, 49-68, 87-115, 175-186.

Houck, M., More Cases in Mute Witnesses: Trace Evidence Analysis, Elsevier (2004), 53-88, 90-104, 165-190, 191-210

MODULE 11.0 RECOGNITION, COLLECTION, AND PRESERVATION OF TRACE EVIDENCE CHECKLIST

Lecture and Discussion Completed	Date	Trainee's Initials
	_____	_____

	Date	Trainer's Initials
	_____	_____

Collect the following evidence from a clothing item:	Date	Trainee's Initials
Properly package a loose hair or fiber	_____	_____
Properly package a loose paint chips or glass fragments.	_____	_____
Tape lift the item	_____	_____
Properly package the item to preserve remaining in situ trace evidence.	_____	_____

The Trainer has reviewed the above exercises

Date_____ Initials_____

Additional Comments:_____

_____

_____

_____

12.0 CRIME SCENE DOCUMENTATION

12.1 OBJECTIVE

To understand the concepts and basic requirements of crime scene note taking and diagramming/sketching.

12.2 METHODS OF INSTRUCTION

(Note: Methods of instruction that follow may be incorporated as part of other modules in this training manual).

12.2.1 REQUIRED READING:

Read the CLD Records Retention Schedule

Review completed case files from three basic CSRT vehicle searches. Discussion and questions with the trainer will accompany each case file.

Document a vehicle accessible to the trainee, as if performing a basic vehicle search. This documentation will be reviewed by the trainer and kept in the trainee's training notebook.

Shadow a Primary Responder on three vehicle search crime scenes, assisting with supplemental note taking and sketching as deemed appropriate by the Primary. This information will be reviewed by the Primary/Trainer. If applicable, these scenes can overlap with those of other documentation training modules.

12.2.2 RESIDENCE DOCUMENTATION

Review completed case files from three CSRT residence searches. These case files should include notes from the exterior and interior of the buildings. Discussion and questions with the trainer will accompany each case file.

Document the exterior of a residence accessible to the trainee, including measurements and nearby landmarks. This documentation will be reviewed by the trainer and kept in the trainee's training notebook.

Document the interior of a residence accessible to the trainee. This will include an overall floor plan, and a focus on one room. This documentation will be reviewed by the trainer and kept in the trainee's training notebook.

Shadow a Primary Responder on three residence search crime scenes, assisting with supplemental note taking and sketching as deemed appropriate by the Primary. This information will be reviewed by the Primary/Trainer. If applicable, these scenes can overlap with those of other documentation training modules.

12.2.3 DECEDENT DOCUMENTATION

Review three completed case files involving the presence of deceased individuals. Discussion and questions with the trainer will accompany each case file.

Document a mock scene which includes a staged decedent. Some complex items should be included, such as blood flow on the body and/or indications of movement by the decedent. This documentation will be reviewed by the trainer and kept in the trainee's training notebook.

Shadow a Primary Responder on three crime scenes involving deceased individuals, assisting with supplemental note-taking and sketching as deemed appropriate by the Primary. This information will be

reviewed by the Primary/Trainer. If applicable, these scenes can overlap with those of other Documentation training modules.

12.2.4 EVIDENCE DOCUMENTATION

This section refers to the documentation of bloodstains, firearms, trajectories, trace, remains, and latent prints. Refer to these respective sections for training plans regarding their appropriate documentation. The trainer will verify that the trainee has met the documentation requirements for these sections.

12.2.5 VEHICLE DOCUMENTATION

This section refers to the documentation of vehicles with respect to locating items such as bullet defects and bloodstain patterns. Discuss and practice with a trainer the measurement techniques of squaring a vehicle and center baseline.

12.3 MODES OF EVALUATION

A review and discussion of all notes and sketches generated by the trainee.

MODULE 12.0 CRIME SCENE DOCUMENTATION CHECKLIST

The following readings have been completed:	Date	Trainee's Initials
Read the CLD Records Retention Schedule	_____	_____

The following case files were reviewed by the Trainee and a discussion and question session was conducted with the trainer:

Three basic CSRT vehicle searches

Case#_____

Case#_____

Case#_____

Date_____Trainee's Initials _____ Trainer's Initials_____

Three CSRT residence searches (exterior and interior of buildings)

Case#_____

Case#_____

Case#_____

Date_____Trainee's Initials _____ Trainer's Initials_____

Three CSRT case files with the presence of deceased individuals.

Case#_____

Case#_____

Case#_____

Date_____Trainee's Initials _____ Trainer's Initials_____

MODULE 12.0 CRIME SCENE DOCUMENTATION CHECKLIST

The following mock situations will be documented as if performing a CSRT case. This documentation will be reviewed by the trainer and kept in the trainee's notebook.

Date Trainee's Initials

A Residence _____ _____

Document the exterior of a residence accessible to the trainee, including measurements and nearby landmarks. _____ _____

Document the interior of a residence accessible to the trainee. This will include an overall floor plan and a focus on one room. _____ _____

Document a mock scene which includes a staged decedent. Some complex items should be included, such as blood flow on the body and/or indications of movement by the decedent. _____ _____

A Vehicle

Document known points on the interior and exterior of a vehicle using baseline and squaring method. _____ _____

The following scenes were shadowed by the Trainee, assisting with supplemental note taking and sketching as deemed appropriate by the Primary. This information will be reviewed by the Primary and/or Trainer.

Attend three vehicle search scenes

Scene date_____ Case#_____

Circle one: Primary/Trainer Initials _____

Scene date_____ Case#_____

Circle one: Primary/Trainer Initials _____

Scene date_____ Case#_____

Circle one: Primary/Trainer Initials _____

Attend three residence search crime scenes

Scene date_____ Case#_____

Circle one: Primary/Trainer Initials _____

Scene date_____ Case#_____

Circle one: Primary/Trainer Initials _____

Scene date_____ Case#_____

Circle one: Primary/Trainer Initials _____

Attend three crime scenes involving deceased individuals

Scene date_____ Case#_____

Circle one: Primary/Trainer Initials _____

Scene date_____ Case#_____

Circle one: Primary/Trainer Initials _____

Scene date_____ Case#_____

Circle one: Primary/Trainer Initials _____

MODULE 12.0 CRIME SCENE DOCUMENTATION CHECKLIST

A review and discussion of all notes and sketches generated by the trainee has been completed:

Date_____ Trainer's Initials_____

Additional Comments:_____

13.0 BLOODSTAIN PATTERN ANALYSIS TRAINING

Many of the requirements in module 13 can be met by completing a 40-hour bloodstain pattern course.

THE HISTORY AND EVOLUTION OF BLOODSTAIN PATTERN ANALYSIS

13.1 OBJECTIVES

To understand the history and evolution of the Bloodstain Pattern Analysis discipline.

To understand the work of Dr. Eduard Piotrowski in Vienna in 1895.

To understand the work of early American Scientists who studied the Bloodstain Pattern discipline (Dr. Paul L. Kirk & Prof. Herbert L. MacDonell)

To understand the current status & developments within the discipline.

To understand the value of Bloodstain Pattern Analysis as it relates to Criminal Investigations.

To understand the role of the International Association of Bloodstain Pattern Analysts.

To understand how historical references can refute some of the criticisms posed by the 2009 NAS report

13.2 METHODS OF INSTRUCTION

13.2.1 Lecture and discussion to include historical information presented in the literature references mentioned below.

13.2.2 SUGGESTED READING

Piotrowski, Eduard, Origin, Shape, Direction and Distribution of the Bloodstains following Head Wounds Caused by Blows, The Institute of Forensic Medicine of the k. k. University in Vienna, March 1895

MacDonell, H. L., “Flight Characteristics and Stain Patterns of Human Blood” and “Bloodstain Pattern Interpretation”, Washington, U. S. Department of Justice, LEAA, N.I.L.E.C.J., 1971

Eckert, W.G. and James, S. H., Interpretation of Bloodstain Evidence at Crime Scenes, 2nd edition, New York, Elsevier, 1998

Bevel, T. and Gardner, R. M., Bloodstain Pattern Analysis, 3rd edition, New York, CRC Press, 2008

MacDonell, H. L., “Segments of History: The Literature of Bloodstain Pattern Interpretation Segment 00: Literature through the 1800’s”, IABPA Newsletter

MacDonell, H.L., “Segments of History in the Documentation of Bloodstain Pattern Interpretation Segment 01: 1901-1910”, IABPA Newsletter

MacDonell, H.L., “Segments of History: The Literature of Bloodstain Pattern Interpretation Segment 02: Literature from 1911 through 1920”, IABPA Newsletter

MacDonell, H.L., “Segments of History: The Literature of Bloodstain Pattern Interpretation Segment 03: Literature from 1921 through 1930”, IABPA Newsletter

National Research Council Committee on Identifying the Needs of the Forensic Science Community. **Strengthening Forensic Science in the United States: a Path Forward.**

Introduction pages 1 to 53 and pages 177 to 179, Washington, D. C: National Academy Press; 2009

Ross M. Gardner; Tom Griffin Foundations for the Discipline of Bloodstain Pattern Analysis: A Response to the Report by the National Academy of Sciences. Journal of Forensic Identification Volume: 60 Issue:4 Dated: July/August 2010 Pages:477 to 494

13.3 MODES OF EVALUATION

Question and answer session.

Competency test (successful completion of the competency is required before analysis may be performed by the analyst).

BLOODSTAIN PATTERN ANALYSIS TERMINOLOGY & DEFINITIONS

13.4 OBJECTIVES

To understand and become familiar with the accepted terminology used in the Bloodstain Pattern Analysis field, in accordance with the IABPA (International Association of Bloodstain Pattern Analysts).

To understand how terminology applies to case situations and written reports.

13.5 METHODS OF INSTRUCTION

13.5.1 Lecture and discussion

13.5.2 Assignments

A packet will be provided that includes bloodstain pattern terminology gathered from SWGSTAIN, Bevel & Gardner, and IABPA. Read this information to become familiar with bloodstain terms.

Complete the written vocabulary quiz associated with bloodstain pattern terminology.

13.6 MODES OF EVALUATION

Review of assignments.

Question and answer session.

Completion of a 40-hour basic BPA course may substitute for some or all of these requirements

PHYSICAL PROPERTIES OF BLOOD

13.7 OBJECTIVES

To learn the components of blood as they relate to the study of Bloodstain Pattern Analysis.

To understand the principles of fluid dynamics as they relate to the study of Bloodstain Pattern Analysis.

To understand the principles of physics as they relate to the study of Bloodstain Pattern Analysis.

13.8 METHODS OF INSTRUCTION

13.8.1 DISCUSSION AND LECTURE ON THE FOLLOWING TOPICS:

Fluid Dynamics (cohesion, surface tension and viscosity)

Drying time

Clotting time

Volume of Blood drops

Size of stain

Surface effects

Terminal velocity

Effect of Blood Thinners

Capillary action

13.8.2 SUGGESTED READING

Wonder, A.Y., Blood Dynamics, Academic Press, 2001

Anderson, J. W., “Capillarity Distortion Analysis” IABPA 1993 Annual Training Conference

Hurley, M. N., Pex, J. O. “Sequencing of Bloody Shoe Impressions by Blood Spatter and Blood Droplet Drying Times”, Oregon State Police Crime Laboratory

White, B., “Bloodstain Patterns on Fabrics: The Effect of Drop Volume, Dropping Height and Impact Angle”, Can. Soc. Forensic Science J. Vol.19, No. 1 (1986)

Laber, T. L. “Diameter of Bloodstain as a Function of Origin, Distance Fallen, and Volume of Drop”, Minnesota Forensic Science Laboratory

Epstein, B., Laber, T. L.., “Preliminary Results – Clotting Time Studies”, Minnesota Forensic Science Laboratory

Raymond, M. A., Smith, E. R., Liesegang, J., “The Physical Properties of Blood-Forensic Considerations”, Science & Justice, Journal of the Forensic Science Society 1996: 36(3) 153-160

Pizzola, P. A., Roth, S. and Deforest, P. R., “Blood Droplet Dynamics – I and II” Journal of Forensic Sciences, JFSCA, Vol.31 No.1, Jan. 1986 pp. 36-49

13.9 ASSIGNMENTS

13.9.1 EXPERIMENT 1: PASSIVE DROPS FROM DIFFERENT HEIGHTS (STAIN DIAMETER VS DISTANCE FALLEN)

- Place a measuring tape against a wall, Mark increments on the tape (3, 12, 36, 72 and 96 inches above the ground) Using a pipette, drip blood onto the smooth and rough target surfaces from each height.
- Target surfaces should include smooth (e.g. paper, glass, tile) and rough (e.g. blotter paper, brick, carpet
- Document with notes and photography each target surface result at each height.
- Note the type of disruption created when each stain hits the surface (smooth edges, scalloped, spines, satellites, or combination).

- Measure stain diameters measurement in millimeters. Record your measurements in a table for easy comparison
- Answer the following question: Can distance fallen be determined from stain diameter? Explain

13.9.2 EXPERIMENT 2: EVALUATE BLOOD DROP STAINS ON FABRICS MOUNTED ON CARDBOARD.

- Drop stains onto a variety of fabrics such as a water-repellent treated sheet (e.g.Scotch Guard), a bath towel, panty hose, cotton/polyester sheet, and worn denim.
- Document, through descriptive notes, the differences in appearance of the stains and the potential influence of the fabric on the stain appearance.
- What characteristics of the fabric appear to have had an effect on stain size and shape?

13.9.3 EXPERIMENT 3: PASSIVE DROPS FROM DIFFERENT ORIGINATING SURFACES.

- Drip blood from two different objects or tools: one with a large surface area (e.g. wooden board, hammer tire iron) and one with a small surface area (e.g. knife, screw driver, ice pick).
- Target surfaces should include smooth (e.g. paper, glass, tile) and rough (e.g. blotter paper, brick, carpet.
- Document the stain sizes and compare with other 13.9.1
- Does the stain size vary more from the distance fallen, volume dropped, or target surface? Can any conclusions be made based on stain size or shape? What factors determine the size of the bloodstain?

13.9.4 EXPERIMENT 4: BLOOD INTO BLOOD DRIP PATTERN ON DIFFERENT SURFACES.

- Target surfaces may include smooth (e.g. tile, paper, glass), and rough (e.g. carpet, and a sidewalk or brick-type surfaces).
- To use both horizontal and vertical targets, position the pipette about 24 inches above the horizontal target and ½ inch in front of the vertical target
- From a height of about 24 inches above the target, drip one drop at a time (blood into blood) into the same area until 3 ml is used. Document the amount of satellite spatter created at the different stages of the drip pattern. If different surfaces were used, contrast the surface influence.

13.9.5 EXPERIMENT 5: LARGER VOLUME DROPS ON DIFFERENT SURFACES.

- Target surfaces may include smooth (e.g. tile, paper, glass) and rough (e.g. carpet, and a sidewalk or brick-type surfaces).
- Drop the entire 5 ml volume all at once from a height of at least 24 inches.
- Document the characteristics of each stain pattern and contrast to the patterns created by one drop at a time. If different surfaces were used, contrast the surface influence.

13.9.6 EXPERIMENT 6: HORIZONTAL MOVEMENT AT DIFFERENT SPEEDS AND DIFFERENT HEIGHTS.

- Allow blood to drip from an object (i.e. pipet, eye dropper) while traveling at a brisk walk for a distance of 6 to 10 feet.
- Repeat, increasing speed to run.
- You may attempt the same experiments with the blood source at different heights, such as knee level, waist level, or 3-6 inches from the surface.

- Attempt the same experiment, including a significant swinging motion of the hands.
- Document the differences in sizes, shapes, and satellite spatter created between the heights and the difference in travel speed.
- Can the direction of motion of a dripping object be determined by observing the stain shapes? How is the shape/directionality of the stains changed by speed? By swinging the hands? Is any additional pattern observed in the drip trail produced by swinging?

13.9.7 Experiment 7: DRYING TIME OF BLOOD

- On a pre-marked target surface (e. g. tile paper, plexi-glass) deposit a single drop into the areas marked for 0, 15, 30, 45, 60, 75 and 90 seconds. Begin timing this series of drops as they are created.
- Once deposited, immediately disrupt the 0 second stain. Do this by drawing a gloved finger through the stain (you are not trying to wipe the entire stain away; you just want to disrupt the edges of the stain). Repeat the disruption process for all of the stains at the timed intervals of 15, 30, 45, 60, 75, and 90 seconds.
- Once completed, repeat this process for stains timed at intervals of 5, 10, 20, 30 and 40 minutes.
- Consider repeating this process in an area that is different than the original location. Consider an area that has greater air circulation, more/less heat, or direct sunlight.
- Once complete and the stains have dried, measure the width of the perimeter ring that is present (you are not measuring the diameter of the stain, but rather the width of the widest section of the dried perimeter).
- Record your observations.

13.10 MODES OF EVALUATION

Review of assignments.

Question and answer session.

Completion of a 40-hour basic BPA course may substitute for some or all of these requirements.

SIZE, SHAPE, AND DISTRIBUTION

13.11 OBJECTIVE

To understand the distinguishing characteristics related to size, shape and distribution of bloodstain evidence

To understand how the characteristics of size, shape and distribution assist in the analysis of bloodstain evidence.

13.12 METHODS OF INSTRUCTION

13.12.1 LECTURE AND DISCUSSION ON THE FOLLOWING:

Size Determination

Shape Determination

Measurements and Angle-of-Incidence Determination

Distribution Determination

13.12.2 REQUIRED READING

Gardner, R. M., “Deformation Levels in Blood Droplets Created by Impact Events”, United States Army Criminal Investigation Command

Adair, Thomas W., “False Wave Cast-Off; Considering the Mechanisms of Stain Formation”, Arapahoe County Sheriff’s Office, Littleton, CO.

Stephens, B. G., M.D. and Allen, T. B., M.D., “Back Spatter of Blood from Gunshot Wounds – Observations and Experimental Simulation” Journal of Forensic Sciences. JFSCA Vol.28 No.2 April 1983 pp 437-439

Christman, D.V., “Expirated Bloodstain Patterns”, Snohomish County Medical Examiner Medicolegal Death Investigator

13.13 EXPERIMENTS

13.13.1 EXPERIMENT 1: IMPACT PATTERN FROM EXPLOSIVE FORCE

- A firearms examiner shall participate in this experiment, and all safety rules shall be followed. Example stains can be examined in lieu of conducting the experiment.
- Saturate a sponge with blood. Suspend the sponge so that it is in the trajectory line of a firearm.
- Hang targets 6 inches in front and 6 inches behind the sponge.
- Remove the target and record the largest, smallest and average spatter diameter. Describe the pattern dispersal.
- Repeat the experiment using targets at 12 and 18 inches. The experiment can be repeated using different target substrate such as denim or paper.
- Describe the different dispersion patterns for forward and back spatter, and at different distance. What is a mist pattern?

13.13.2 EXPERIMENT 2: IMPACT SPATTER FROM BLUNT FORCE

- Take a wooden board or similar type object and strike an amount of blood on an elevated surface approximately 1 foot from a wall.
- Document observations of the changes to the static pool. Document the sizes, shapes, and distribution of the stains on the wall and floor. Document a size range and a predominant stain size. Be sure to document floor pattern observations also.

13.13.3 EXPERIMENT 3: EXPIRATED PATTERNS

- Place a small amount of blood mixed with saliva on a raised horizontal surface and force the blood mixture onto a vertical surface using a mechanism that mimics expiration. Possible mechanisms include: canned air, or a large transfer pipette that forcibly expels the blood/saliva mixture onto a target surface. Repeating the experiment at varying distances to the target may be useful.
- Document your observations, including any floor patterns
- Compare impact and expirated observations

13.13.4 EXPERIMENT 4: STEPPING INTO A STATIC POOL.

- Create a pool of blood on the floor using approximately 5 ml of blood. Step gently into the pool of blood. Document your observations of the alteration of the static pool. Document your observations of any spatter/stains created. Document your observations of the shoe used to step into the pool. Document your observations of the clothing worn at the time.
- Repeat the experiment creating a new pool of blood and now stomping into the static pool.
- It may be helpful to repeat the experiment creating a new pool of blood and now jumping into the static pool. Document as described previously.

13.13.5 EXPERIMENT 5: PROJECTED BLOOD (ARTERIAL SPURTS).

- Eject about 3 ml of blood from a syringe using constant pressure, holding the syringe at about 24 inches from the target and a 45 degree angle. Record observed blood motion and stains.
- The experiment can be repeated at a variety of distances and angles (6”, 18”, 24”, 36", and 60”), (20 degrees, 45 degrees, and 90 degrees). In addition, the syringe can be moved from right to left while ejecting, and can be angled toward the floor rather than the wall. Amount of pressure can also be varied.
- Document your observations. Using the supplied syringe and tube, release the total amount in the syringe while moving it from left to right.

13.13.6 EXPERIMENT 6: ARTERIAL RAIN

- Release the blood in the syringe in straight forward manner the length of the room. Document your observations of the stains created on the floor between the location of the syringe and the far wall. Document your observations of the pattern created on the far wall.

13.13.7 EXPERIMENT 7: STAIN SHAPE VS. IMPACT ANGLE

- Place smooth, white-colored targets at known angles from 10º to 90º.
- Mark each target surface with its known angle.
- Allow several drops to fall on each target, forming separate stains and allow each target to dry for at least 5 minutes after the last drop.
- Measure the length and width of the stains and calculate the length/width ratio for the stains at each known angle.

13.14 ASSIGNMENTS

13.14.1 ANSWER THE FOLLOWING QUESTIONS IN YOUR NOTEBOOK:

What other events may produce stain patterns with characteristics of impact?

What are the effects of porous/non-porous and smooth/textured target surfaces?

13.15 MODES OF EVALUATION

Review of assignments.

Question and answer session.

Completion of a 40-hour basic BPA course may substitute for some or all of these requirements.

COMMON PATTERN TYPES

13.16 OBJECTIVE

To understand how the size, shape and distribution of stains at the scene or found on items of evidence allows stains to be placed in one of six categories.

- Blood dispersed through the air as a function of gravity (e.g., drip patterns, drip trails)
- Blood ejected in volume under pressure (e.g., spurt and gush patterns)
- Blood ejected over time from an object in motion (e.g., cast-off patterns)
- Blood dispersed from a point source by force (e.g., impact patterns, expectorate)
- Blood that is deposited through transfer (e.g., swipes, wipes, pattern transfers)
- Blood that accumulates or flows on a surface (e.g., pools, flows)

13.17 METHODS OF INSTRUCTION

13.17.1 LECTURE & DISCUSSION

Bloodstains fall into one of six major categories

13.17.2 SUGGESTED READINGS

LeRoy, H. A., “Bloodstain Pattern Interpretation”, Identification Newsletter, Canadian Identification Society, Vol.6 issue 1 January 1983

Sweet, M. J., “Velocity Measurements of Projected Bloodstains from a Medium Velocity Impact Source”, Canadian Society of Forensic Science Journal Vol. 26, No.3 (September 1993)

Barnes, D., “Intermittent Projected Bloodstains”, Crime Scene Unit, Ohio Bureau of Criminal Identification and Investigation, 1997

Bevel, T., “Geometric Bloodstain Interpretation” FBI Law Enforcement Bulletin, May 1983

13.18 EXPERIMENTS

13.18.1 CAST-OFF EXPERIMENTS:

- Create two walls and a ceiling using paper or other suitable material.
- Place liquid blood on one end of an object
- Face one ‘wall’, such that the second ‘wall’ is behind you. Produce stains by swinging bloodied objects. Objects should include a variety of surface areas, such as: hammer, knife, bat, board, pry bar, screwdriver.

- Consider trying the following: forward and backward swings, right and left handed swings; overhand swings; different surfaces for the same object and a sudden termination in the swinging of an object
- Document the results and record your observations.
- Compare the characteristics between the cast-off patterns.

13.18.2 HAND CONTACT EXPERIMENTS

- Place blood on your hand and hit the wall with some force with the palm side of your hand.
- Document the results and record your observations.
- Place blood on your hand and touch the wall with the palm side of your hand.
- Document the results and record your observations.
- Compare and contrast the differences in the patterns created.
- First wet your hand, then place blood on your hand and hit the wall with some force with the palm side of your hand.
- Document the results and record your observations.
- First wet your hand, then place blood on your hand and touch the wall with the palm side of your hand.
- Document the results and record your observations.
- Compare and contrast the differences between all the contact patterns created.
- Repeat the previous contact experiments using the back of your hand instead of the palm side of your hand.
- Document the results and record your observations.
- Compare and contrast the differences between all the contact patterns created.

13.18.3 CONTACT WITH FABRIC

- Use a bloodied towel and perform a contact transfer using the palm side of your hand.
- Document the results and record your observations.
- Use a bloodied towel and perform a contact transfer using the back side of your hand.
- Document the results and record your observations.
- Compare and contrast the differences between the contact patterns.

13.18.4 CONTACT WITH WIG/HAIR

- Place blood on a wig/hair and let sit for the following times before touching the wig/hair to the wall. Use times of 10 seconds, 30 seconds, and 1 minute. Document the results and record your observations for each time interval.
- Place some blood on the wig/hair and swipe it on the vertical surface. Document the results and record your observations.
- Place some blood on the wall and wipe through it with the wig/hair. Document the results and record your observations.
- Place some blood on the wall, wait 5 minutes, wipe through it with the wig/hair. Document the results and record your observations.

13.19 ASSIGNMENT:

Prepared a written report comparing and contrasting the six common pattern types.

13.20 MODES OF EVALUATION

Review of experiments and assignment.

Question and Answer Session.

Completion of a 40-hour basic BPA course may substitute for some or all of these requirements.

ORIGIN DETERMINATION

13.21 OBJECTIVES

To understand the validity and usefulness of a source of origin determination in case work.

To understand the multiple ways to determine and/or document a three dimensional blood source and to be able to discuss the advantages & disadvantages of these techniques.

13.22 METHODS OF INSTRUCTION

13.22.1 LECTURE AND DISCUSSION TO INCLUDE THE FOLLOWING:

- String reconstruction of an impact
- Tangential method of origin determination
- Other methods/computer programs

13.22.2 SUGGESTED READINGS

Kercheval, J., “Basic Bloodstain Concepts for Area of Origin Calculations…Part 1” MAAFS Newsletter, April 1999 Vol. 27, No.2

MacDonell, H. L., “Bloodstain Patterns, No More Strings, No More Computer, Just Simple Mathematics, That’s all it Takes”, Laboratory of Forensic Science, Corning, New York

Griffin, T. J. and Anderson, J. W., “Out on a Tangent with Bloodstain Pattern Interpretation”, February 21, 1993

Wilson, F. E. and Schuessler, D., “Automated Geometric Interpretation of Human Bloodstain Evidence”

Gardner, R. and Bevel, T., “Chapter V Bloodstain Mathematics”, 1990

13.23 ASSIGNMENT:

The trainee will be given an impact pattern to string back to a source of origin. Documentation to be turned in should include: (1) descriptions of the stain pattern, (2) the measurements and mathematical figures for your chosen ten stains, (3) the height, distance from an adjacent wall, and the range from a wall for the blood source, and (4) the mathematical workup validating the source location utilizing the tangent method on three of your chosen stains.

13.24 MODES OF EVALUATION

Review of assignment.

Question and Answer Session.

Completion of a 40-hour basic BPA course may substitute for some or all of these requirements.

BLOODSTAIN EVIDENCE PHOTOGRAPHY AND DOCUMENTATION

13.25 OBJECTIVE

To understand the methodology of properly documenting bloodstain patterns using photography, sketching and notes.

13.26 METHODS OF INSTRUCTION

13.26.1 LECTURE AND DISCUSSION TO INCLUDE THE FOLLOWING:

- Documentation of Stains and Stain Patterns
- Roadmapping technique

13.26.2 SUGGESTED READING

Raymond, M. A. and Hall, R. L., “An Interesting Application of Infra-Red Reflection Photography to Blood Splash Pattern Interpretation”, Elsevier Forensic Science International, 31 (1986) 189-194

Bevel, T. and Gardner, R. M., Bloodstain Pattern Analysis, Third Edition, New York, CRL Press, 2008, pg 309-312.

Assignment: Properly photograph and document a complex bloodstain pattern in a mock scene using the roadmapping technique.

13.27 MODES OF EVALUATION

Review of assignment

Question and answer session

Completion of a 40-hour basic BPA course may substitute for some or all of these requirements.

MODULE 13.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

	Date	Trainee's Initials
Trainee has completed a 40 hour basic bloodstain pattern course	_____	_____

HISTORY OF BLOODSTAIN PATTERN ANALYSIS

	Date	Trainee's Initials
Lecture and discussion _____ _____		
	Date	Trainer's Initials
	_____	_____

MODULE 13.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

BLOODSTAIN PATTERN ANALYSIS TERMINOLOGY & DEFINITIONS

Lecture and discussion Date Trainee's Initials

_____ _____

Date Trainer's Initials

_____ _____

The SWGSTAIN, Bevel & Gardner, and IABPA readings have been read:

Date Trainee's Initials

_____ _____

The trainee has completed and passed a written vocabulary quiz

Date Trainer's Initials

_____ _____

A question and answer session was completed

Date Trainer's Initials

_____ _____

Additional Comments:_____

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MODULE 13.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

PHYSICAL PROPERTIES OF BLOOD

	Date	Trainee's Initials
Lecture and discussion	_____	_____

	Date	Trainer's Initials
	_____	_____

The following experiments have been completed

Experiment 1: Passive Drops from different heights	_____	_____
Experiment 2: Evaluate blood drop stains on fabrics mounted on cardboard.	_____	_____
Experiment 3: Different originating surfaces.	_____	_____
Experiment 4: Drip pattern on different surfaces.	_____	_____
Experiment 5: Larger volume drops on different surfaces.	_____	_____
Experiment 6: Horizontal movement at different speeds and different heights.		

All the experiments have been reviewed and are complete

	Date	Trainer's Initials
	_____	_____

A question and answer session was completed

	Date	Trainer's Initials
	_____	_____

Additional Comments:_____

_____

MODULE 13.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

SIZE SHAPE AND DISTRIBUTION

Lecture and discussion	Date	Trainee's Initials
_____ _____		
	Date	Trainer's Initials
	_____	_____

The following experiments have been completed

Experiment 1: Impact pattern	_____	_____
Experiment 2: Wood striking a static pool	_____	_____
Experiment 3: Expirated patterns	_____	_____
Experiment 4: Create a hand clap impact	_____	_____
Experiment 5: Finger flicks	_____	_____
Experiment 6: Dropped items into static pool	_____	_____
Experiment 7: Stepping into a static pool	_____	_____
Experiment 8: Simulated arterial	_____	_____
Experiment 9: Arterial Rain	_____	_____

MODULE 13.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

SIZE SHAPE AND DISTRIBUTION

The questions have been answered in the trainee's notebook.

Date _____ Trainee's Initials _____

Date _____ Trainer's Initials _____

Correctly characterize six major bloodstain patterns

Date _____ Trainer's Initials _____

All the experiments have been reviewed and are complete

Date _____ Trainer's Initials _____

A question and answer session was completed

Date _____ Trainer's Initials _____

Additional Comments:_____

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MODULE 13.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

COMMON PATTERN TYPES

Lecture and discussion	Date	Trainee's Initials
_____	_____	

	Date	Trainer's Initials
	_____	_____

The following experiments have been completed

Experiment 1: Cast-off	_____	_____
Experiment 2: Hand Contact experiments	_____	_____
Experiment 3: Contact with fabric	_____	_____
Experiment 4: Contact with wig/hair	_____	_____

A written report comparing and contrasting the six common pattern types has been prepared.

Date	Trainee's Initials
_____	_____

MODULE 13.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

COMMON PATTERN TYPES

All the experiments have been reviewed and are complete

Date _____ Trainer's Initials _____

A question and answer session was completed

Date _____ Trainer's Initials _____

Additional Comments:_____

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MODULE 13.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

ORIGIN DETERMINATION

Lecture and discussion	Date	Trainee's Initials
_____	_____	
	Date	Trainer's Initials
	_____	_____

The assignment has been completed

The area of origin was determined in an impact pattern _____ _____

All the experiments have been reviewed and are complete

	Date	Trainer's Initials
	_____	_____

A question and answer session was completed

	Date	Trainer's Initials
	_____	_____

Additional Comments: _____
_____
_____
_____

MODULE 13.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

BLOODSTAIN EVIDENCE PHOTOGRAPHY AND DOCUMENTATION

	Date	Trainee's Initials
Lecture and discussion	_____	_____

	Date	Trainer's Initials
	_____	_____

The following assignment has been completed:

Properly photograph and document a complex bloodstain pattern in a mock scene using the roadmapping technique. _____ _____

All the experiments have been reviewed and are complete

Date _____ Trainer's Initials _____

A question and answer session was completed

Date _____ Trainer's Initials _____

Additional Comments:_____
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14.0 BLOODSTAIN PATTERN ANALYSIS FOR LABORATORY EXAMINATION

14.1 BACKGROUND

Bloodstain pattern analysis is the scientific study of the static consequences resulting from a bloodletting event(s). The role of a Bloodstain Pattern Analyst is to assist in the reconstruction of those events that could have created the bloodstains and bloodstain patterns at a crime scene or on items of physical evidence recovered from that scene. Information that may be obtained includes, but is not limited to: the relative position or locations of a victim and/or suspect at the time of bloodshed; the possible type of weapon used; the minimum number of blows struck; the sequence of blood stain pattern events; the route taken by individuals during or after bloodshed; possible mechanisms that produced blood staining on clothing or other items.

14.2 OBJECTIVES

This document summarizes a training procedure for Bloodstain Pattern Analysis of physical evidence in the laboratory. These items include: clothing, carpeting, firearms, and other items of interest or photographic documentation submitted for analysis. In addition, the training will include interpretation of the bloodstain patterns in order to determine critical subject/object location(s) and reconstruct events associated with the incident.

14.3 SAFETY PRECAUTIONS

All bloodstains have the potential to transmit infectious diseases such as Hepatitis B, Hepatitis C, and HIV/AIDS. Personal protective devices should be used as necessary. The analyst must demonstrate their understanding of the health and safety issues associated with bloodstain pattern analysis, their awareness of blood borne pathogens and other related health hazards and their understanding of biohazard safety equipment and procedures.

14.4 METHODS OF INSTRUCTION

14.4.1 LECTURE AND DISCUSSION ON THE FOLLOWING:

Document Technical Knowledge in BSPA on various fabrics and substrates

A. History
B. Terminology
C. Math and Physics
D. Application of the scientific method to bloodstain pattern analysis
1. Problem Identification
2. Hypothesis
3. Experimentation / data collection
4. Data analysis
5. Theory / conclusions
E. Analysis of evidence as it relates to lab examination
1. Packaging, unsealing and resealing of evidence in the lab
2. Photography
3. Diagrams and Sketches
4. Narrative Descriptions and note taking
5. Recognition and preservation of multiple types of evidence
6. Collection of daughter items and adding new item to LIMS
F. Physical properties of blood on physical evidence
1. Clotted Blood on different surfaces and materials

a. Clot formation
b. Serum separation
c. Clot retraction
2. Drying times of blood on different surface materials
a. Target surface effects
b. Environmental effects
c. Volume of stain
G. Blood drop characteristics on different surface materials
1. Stain size vs. source of origin
2. Stain size vs. distance fallen
3. Stain size vs. drop volume
H. Pattern Identification on different surface materials
1. Drip bloodstain patterns
a. Dripping blood
b. Large volume of falling blood
c. Drip patterns
d. Flow patterns
e. Blood pools and saturation
2. Large volume projected patterns
a. Arterial
b. Splash
3. Transfer patterns
a. Swipe
b. Wipe
c. Impressions
4. Cast-Off patterns
a. Arc
b. Cessation
c. Number of blows
5. Impact patterns
a. Blunt force
b. Gunshot
c. Other
6. Expirated patterns
a. Bubble rings
b. Stringing
7. Voids
8. Altered stains
I. Impact site determinations on different surface materials
1. Directionality of stains
2. Angle of impact determinations
a. Methods of measurement
b. Use of trigonometric functions
3. Point of convergence determinations
4. Area of origin determinations
a. Stringing
b. Tangent
J. Environmental/physiological considerations on different surface materials
1. Insect activity
2. Moisture
a. Body fluids
b. Environmental
3. Temperature
K. Other considerations on different surface materials
1. Target surface effects

2. Limiting angles
3. Overlapping bloodstain patterns
4. Chronological determinations
5. Enhancement techniques
6. Experimentation

L. Limitations in bloodstain pattern analysis on physical evidence once removed from a scene

1. Loss of contextual information
2. Cross contamination from inappropriately packaging wet items
3. Insufficient written and photographic documentation

M. Procedure for the Examination of Bloodstained items in the laboratory

1. General description and photographs
2. Select areas for detailed examinations
3. Detailed description and photographs
4. Sketching
5. Evaluation of clothing as worn if applicable
6. Initial hypothesis
7. Experimentation and documentation of results if applicable
8. Comparison of test material to scene evidence if applicable
9. Final conclusions
10. Prepare report

N. Report Writing

1. Area of origin reconstruction
2. Subject implicated
3. Subject statements supported
4. Qualified conclusion
5. Inconclusive
6. No conclusion possible

14.4.2 SUGGESTED READING

Bevel, Tom, and Gardner, Ross M., *Bloodstain Pattern Analysis -- With an Introduction to Crime Scene Reconstruction*, CRC Press, Boca Raton, FL, 1997.

James, Stuart H., and Eckert, William G., *Interpretation of Bloodstain Evidence at Crime Scenes*, 2nd Edition, CRC Press, Boca Raton, FL, 1999.

MacDonell, Herbert L., *Bloodstain Patterns*, Revised Edition, Laboratory of Forensic Science, Golos Printing, Inc., NY, 1997.

Eckert W.G. and James S.H., *Interpretation of Bloodstain Evidence at Crime Scenes,* New York: Elsevier Publishing Co., Inc., 1989.

Bevel T. and Gardner R.M., *Bloodstain Pattern Analysis: With an Introduction to Crime Scene Reconstruction, Second Edition*, Boca Raton (Florida): CRC Press, 2001.

MacDonell H.L., *Bloodstain Pattern Interpretation*, Laboratory of Forensic Science, Corning NY, 1982.

MacDonell H.L., *Bloodstain Patterns – Revised*, Laboratory of Forensic Science, Corning NY, 1992.

James S.H., (Editor), *Scientific and Legal Applications of Bloodstain Pattern Interpretation*, Boca Raton (Florida): CRC Press, 1999.

Wonder A.Y., *Blood Dynamics*, Academic Press, 2001

James S. H. and Nordby, J., *Forensic Science: An Introduction to Scientific and Investigative Techniques*, Boca Raton (Florida): CRC Press, 2002.

DeForest, P. R., Gaensslen, R. E., Lee, H.C. , *Forensic Science: An Introduction to Criminalistics*, McGraw-Hill, Inc., New York, 1983.

MacDonnell, H. L., and Bialousz, L., *Flight Characteristics and Stain Patterns of Human Blood*, Washington, D.C., U.S. Department of Justice, Law Enforcement Assistance Administration, 1971.

Spalding, Robert, "Bloodstain Pattern Evidence and the Evaluation of Violent Crime Scenes," The Prosecutor, Vol. 28, No. 3, May/June 1994.

Wolson, Toby L., "Documentation of Bloodstain Pattern Evidence," J. Forensic Ident., pp.396-445 (4), 1995.

Kirk, P. L., "Blood -- A Neglected Criminalistics Research Area," Law Enforcement Science and Technology, Vol. 1, Academic Press, London, 1967, pp. 267-279.

Piotrowski, Eduard, “Origin, Shape, Direction and Distribution of the Bloodstains Following Head Wounds Caused by Blows”, Vienna, March 1895.

Balthazard, V., Piedelievre, R., Desoille, H., and Derobert, L., "Etude des Gouttes de Sang Projete," Ann. Med. Legale Criminol. et Police Sci. Med. Sociale et Toxicol., Vol. 19, 1939, pp. 265-323.

Pizzola, P. A., Roth, S. and DeForest, P. R., "Blood Droplet Dynamics - I.", Journal of Forensic Sciences, Vol. 31, 1986, pp. 36-49.

Pizzola, P. A., Roth, S. and DeForest, P. R., "Blood Droplet Dynamics - II.", Journal of Forensic Sciences, Vol. 31, 1986, pp. 50-64.

White, B., "Bloodstain Patterns on Fabrics: The Effect of Drop Volume, Dropping Height and Impact Angle," Can. Soc. Forens. Sci. J. Vol. 19, No. 1 (1986).

MacDonnell, Herbert L. and Panchou, Catherine G., "Bloodstain Patterns on Human Skin," Can. Soc. Forens. Sci. J., Sept. 1979.

Willis, Cordelia, Piranian, Anna K., Donaggio, John R., Barnett, Robert J., and Rowe, Walter F., "Errors in the Estimation of the Distance of Fall and Angles of Impact Blood Drops," Forensic Sci. International, 123 (2001) 104.

Templeman, Henry, "Errors in Blood Droplet Impact Angle Reconstruction Using a Protractor," J. Forensic Ident., 40(1), 1990.

Stephens, B. G., and Allen, T. B., "Backspatter of Blood from Gunshot Wounds -- Observations and Experimental Simulation," Journal of Forensic Sciences, Vol. 28, No. 2, April 1983, pp. 437-439.

Slemko, J., “Bloodstains on Fabric: The Effects of Droplet Velocity and Fabric Composition,” International Association of Bloodstain Pattern Analysts Newsletter, Dec. 2003.

Holbrook, M., “Evaluation of Blood Deposition on Fabric: Distinguishing Spatter and Transfer Stains,” International Association of Bloodstain Pattern Analysts News, Vol. 26, No. 1, March 2010.

14.4.3 COMPLETION OF PREREQUISITE TRAINING MENTIONED BELOW

40 Hour course in bloodstain pattern analysis or equivalent

40 Hour course in advanced bloodstain pattern analysis or equivalent

Demonstrate knowledge in general crime laboratory procedure, quality assurance and safety

14.5 MODES OF EVALUATION

14.5.1 MOCK BLOODSTAIN PATTERN ANALYSIS ON PHYSICAL EVIDENCE

Evaluation of documents, photographs or other materials supplied with mock evidence being examined

Examine bloodstained evidence by the method outlined in section 14.4.1(M) of this document

Prepare a written report to be evaluated by BSPA trainer

Observe video of the making of the mock exam (if available)

Analyst must successfully complete a minimum of three mock laboratory examinations of physical evidence including clothing

14.5.2 REVIEW OF COMPLETED BLOODSTAIN PATTERN ANALYSIS CASEWORK

Evaluation of case written documentation and photographs

Evaluation of bloodstain pattern analyst's conclusion

Prepare a bloodstain pattern analysis report based on material reviewed

Discuss case with case analyst and/or trainer

Evaluation of bloodstain pattern analyst's report and analyst trainee's report

Analyst must review a minimum of five completed cases

14.5.3 BLOODSTAIN PATTERN ANALYSIS COMPETENCY TEST

Competency will be determined by the BSP analyst trainer upon the successful completion of all the above mentioned tasks and a competency examination

14.5.4 MOOT COURT

Analyst trainee must successfully complete a mock trial in the area of bloodstain pattern analysis.

Analyst trainee must effectively communicate the findings so that they may be understood by the criminal justice community.

14.5.5 SUPERVISED BLOODSTAIN PATTERN ANALYSIS CASEWORK

Evaluation of documents, photographs or other case materials

Examine bloodstained evidence by the method outlined in section 13.4.1(M) of this document

Prepare a written report

Case discussion and evaluation of results by BSPA trainer

Analyst must successfully complete a minimum of three supervised bloodstain pattern cases

MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAMS CHECKLIST

DOCUMENT PREREQUISITE TRAINING

40 hour basic course	Date	Analyst's initials
	_____	_____
	Date	Trainer's initials
	_____	_____
40 hour advanced course	Date	Analyst's initials
	_____	_____
	Date	Trainer's initials
	_____	_____
General Crime Lab Procedures, Quality Assurance and Safety	Date	Analyst's initials
	_____	_____
	Date	Trainer's initials
	_____	_____
A question and answer session was completed	Date	Trainer's initials
	_____	_____

Additional Comments:_____

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MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAMS CHECKLIST

REVIEW OF BLOODSTAIN PATTERN ANALYSIS LITERATURE

Lecture and discussion	Date	Analyst's initials
	_____	_____
	Date	Trainer's initials
	_____	_____
A question and answer session was completed	Date	Trainer's initials
	_____	_____

Additional Comments:_____

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MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAMS CHECKLIST

DOCUMENT TECHNICAL KNOWLEDGE IN BSPA ON VARIOUS FABRICS AND SUBSTRATES

Lecture and discussion	Date	Analyst's initials
	_____	_____
	Date	Trainer's initials
	_____	_____

Technical knowledge has been demonstrated In the following:	Date	Analyst's initials
History	_____	_____
Terminology	_____	_____
Math and Physics	_____	_____
Application of the scientific method to BSPA	_____	_____
Analysis of evidence as it relates to lab examination	_____	_____
Physical properties of blood on physical evidence	_____	_____
Blood drop characteristics on different surface materials	_____	_____
Pattern identification on different surface materials	_____	_____
Impact site determinations on different surface materials	_____	_____
Environmental/Physiological considerations On different surface materials	_____	_____
Other considerations on different surface materials	_____	_____
Limitations in BSPA on physical evidence Once removed from the scene	_____	_____
	Date	Trainer's initials
	_____	_____

A question and answer session was completed	Date	Trainer's initials
	_____	_____

Additional Comments:_____

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MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAMS CHECKLIST

MOCK BLOODSTAIN PATTERN ANALYSIS ON PHYSICAL EVIDENCE

Lecture and discussion	Date	Analyst's initials
	_____	_____
	Date	Trainer's initials
	_____	_____

The following have been completed:	Date	Analyst's initials
Evaluation of documents, photographs or other Materials supplied with mock evidence	_____	_____
Examine bloodstained evidence by the method Outlined in Technical Knowledge Section (3-M) Of this document	_____	_____
Prepare a written report to be evaluated by BSPA trainer	_____	_____
Observe video of the making of the mock Exam (if available)	_____	_____
Mock exam A	_____	_____
Mock exam B	_____	_____
Mock exam C	_____	_____
	Date	Trainer's initials
	_____	_____

A question and answer session was completed	Date	Trainer's initials
	_____	_____

Additional Comments:_____

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MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAMS CHECKLIST

REVIEW OF COMPLETED BLOODSTAIN PATTERN ANALYSIS CASEWORK

Lecture and discussion	Date	Analyst's initials
	_____	_____
	Date	Trainer's initials
	_____	_____

The following have been completed:	Date	Analyst's initials
Evaluation of case written documentation and photographs	_____	_____
Evaluation of bloodstain pattern analyst's conclusion	_____	_____
Prepare a bloodstain pattern analysis report based on material reviewed	_____	_____
Discuss case with case analyst and/or trainer	_____	_____
Evaluation of bloodstain pattern analyst's report and analyst-trainee's report	_____	_____
Analyst review of five completed cases	_____	_____
	Date	Trainer's initials
	_____	_____

A question and answer session was completed	Date	Trainer's initials
	_____	_____

Additional Comments:_____

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MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAMS CHECKLIST

BLOODSTAIN PATTERN ANALYSIS COMPETENCY TEST

Lecture and discussion	Date	Analyst's initials
	_____	_____
	Date	Trainer's initials
	_____	_____
Competency exam	Date	Analyst's initials
	_____	_____
	Date	Trainer's initials
	_____	_____
A question and answer session was completed	Date	Trainer's initials
	_____	_____

Additional Comments:_____

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MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAMS CHECKLIST

MOOT COURT

Lecture and discussion	Date	Analyst's initials
	_____	_____
	Date	Trainer's initials
	_____	_____
Mock trial in bloodstain pattern analysis	Date	Analyst's initials
	_____	_____
	Date	Trainer's initials
	_____	_____
A question and answer session was completed	Date	Trainer's initials
	_____	_____

Additional Comments:_____

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MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAMS CHECKLIST

SUPERVISED BLOODSTAIN PATTERN ANALYSIS CASEWORK

Lecture and discussion	Date	Analyst's initials
	_____	_____
	Date	Trainer's initials
	_____	_____

The following have been completed:	Date	Analyst's initials
Supervised case 1 Case number:_____	_____	_____
	Date	Trainer's initials
	_____	_____
Supervised case 2 Case number:_____	_____	_____
	Date	Trainer's initials
	_____	_____
Supervised case 3 Case number:_____	_____	_____
	Date	Trainer's initials
	_____	_____
A question and answer session was completed	Date	Trainer's initials
	_____	_____

Additional Comments:_____

15.0 CONTROLLED SUBSTANCES AND PARAPHERNALIA

15.1 OBJECTIVES

To become familiar with common hiding locations, and to recognize controlled substances and paraphernalia.

15.2 METHODS OF INSTRUCTION

Lecture and discussion with trainer and/or chemist.

View examples of paraphernalia and commonly encountered controlled substances.

15.3 MODES OF EVALUATION

Question and answer session.

MODULE 15.0 CONTROLLED SUBSTANCES AND PARAPHERNALIA CHECKLIST

Completed:

Lecture and Discussion	Date	Trainee's Initials
_____	_____	
	Date	Trainer/Chemist Initials
	_____	_____

Examples of paraphernalia and commonly encountered controlled substances were viewed.

	Date	Trainee's Initials
	_____	_____
Question and answer session:	Date	Trainee's Initials
_____ _____		
	Date	Trainer's Initials
	_____	_____

Additional Comments:_____
_____
_____
_____

16.0 SHOOTING INCIDENT RECONSTRUCTION

DEFECT ASSESSMENT

16.1 OBJECTIVE

To understand how to recognize a defect consistent with the impact or passage of a projectile in various target materials.

To understand how to test defects for the presence of copper and lead.

16.2 METHODS OF INSTRUCTION

16.2.1 LECTURE & DISCUSSION

Discuss with trainer bullet impact marks and defects in various targets.

If possible, attend an autopsy with gunshot wounds present. If not possible, view case photos and discuss topic with mentor.

16.2.2 SUGGESTED READING

DiMaio, Vincent J. M., “Gunshot Wounds” Elsevier, New York 1985 (chapters 3-9)

Haag, Lucien C., “Shooting Incident Reconstruction” Elsevier, New York 2006 (chapters 3, 4, 6 & 7)

Dillon, John H., “The Sodium Rhodizonate Test: A Chemically Specific Chromophoric Test for Lead in Gunshot Residues,” AFTE Journal, Vol. 22, No. 3, July 1990, pp. 251-256.

Lekstrom, Julie A., and Koons, Robert D., “Copper and Nickel Detection on Gunshot Targets by Dithiooxamide Test,” Journal of Forensic Sciences, Vol. 31, No. 4, October 1986, pp. 1283-1291.

Shem, Robert J., “A Simplified Griess and Sodium Rhodizonate Test,” AFTE Journal, Vol. 33, No. 1, Winter 2001, pp. 37-39.

WSPCL Firearms Procedures Manual, section 3.0.

16.2.3 EXERCISE:

Working with an experienced firearms examiner, shoot various types of targets, to include but not limited to, wood, fabric, drywall, vehicle parts, glass (single, double paned, laminated) at several angles. Choose several different firearms to include a pistol, rifle and shotgun. If possible, using Kevlar filled boxes attempt to capture projectiles after striking target material. Record by written and photographic documentation of the defects produced. Discuss with trainer.

From the bullet defects created in the previous exercise, test several for copper and lead wipe. Also examine area surrounding these defects for other gunshot residues.

From the bullet defects created in the previous exercise, discuss and record the defects entrance and exit characteristics and whether the bullet defects penetrate, perforate, graze, or ricochet the target material.

16.3 ASSIGNMENT

Several defects will be prepared in several target materials. Evaluate each defect for the presence of copper and lead, other gunshot residue, entrance and exit characteristics, etc.

16.4 MODES OF EVALUATION

Review exercises and assignment.

Question and Answer Session.

DISTANCE DETERMINATION EVIDENCE

16.5 OBJECTIVE

To understand the evidential value of gunshot residue and distance determination.

To recognize and properly collect target material with gunshot residue.

16.6 METHODS OF INSTRUCTION

16.6.1 LECTURE & DISCUSSION

Shadow a firearms examiner during the laboratory examination of evidence for distance determination. Discuss with examiner how these patterns and testing changes with the presence of blood or chemical treatment.

16.6.2 SUGGESTED READING

DiMaio, Vincent J. M., “Gunshot Wounds” Elsevier, New York 1985 (chapter 4)

Haag, Lucien C., “Shooting Incident Reconstruction” Elsevier, New York 2006 (chapter 5)

WSPCL Firearms Procedures Manual, section 3.0.

16.6.3 EXERCISES

Working with an experienced firearms examiner, shoot a cloth target from the following distances: contact, 6 inches, 12 inches, 24 inches, and 36 inches. Choose several different firearms to include a pistol, rifle and shotgun. Record by written and photographic documentation ~~of~~ the gunshot residues produced. Discuss with trainer the results and packaging issues with these patterns.

Working with an experienced firearms examiner, wrap a revolver in cloth and fire the revolver. Examine the residue pattern left on the cloth. Test the distance away the cloth needs to be before the pattern is not transferred.

16.7 MODES OF EVALUATION

Review exercises.

Question and Answer Session.

TRAJECTORY MEASUREMENT

16.8 OBJECTIVE

To understand how to accurately record and document defects for trajectory reconstruction.

To understand how to associate defects to establish trajectory assessment.

To understand the limitations of trajectory analysis.

To understand how to measure the vertical and horizontal angles of a trajectory with and without a trajectory rod.

16.9 METHODS OF INSTRUCTION

16.9.1 LECTURE & DISCUSSION

Discuss with the trainer the different methods for associating and documenting defects in a trajectory. Topics to discuss are listed below but are not meant to be all inclusive.

Rod placement with and without centering cones.

Use of lasers or other methods to show a continuation of a trajectory over a distance.

+/- 5 degrees of error, and how it was established.

Bore scope use in trajectory examination.

“French Fry” (foam "core" produced by bullet through foam)

Varying surface heights/thickness along trajectory.

Stringing glass or defects

Use of a tripod for establishing examining trajectories in moving objects such as a trunk lid.

The different conventions for labeling defects and the limitations and consideration in labeling.

When is it appropriate to measure the vertical and horizontal measurements for trajectories?

Bullet flight – define yaw, tumbling, external ballistics, and terminal ballistics.

Using ellipse calculations to determine trajectory of a projectiles angle of impact.

16.9.2 SUGGESTED READING

Haag, Lucien C., “Shooting Incident Reconstruction” Elsevier, New York 2006 (chapters 8-10)

16.9.3 EXERCISES

Measure the locations of the defects and the horizontal and vertical angles of their trajectories on several mock walls that have been created.

String a defect in tempered glass to locate the point of impact.

Review several complex trajectory crime scene cases. Discuss with your trainer how the scene was processed, results obtained and limitations of the scene.

16.10 MODES OF EVALUATION

Review of exercises.

Question and Answer Session.

EJECTION PATTERN ANALYSIS

16.11 OBJECTIVE

To understand how cartridges are extracted and ejected from semiautomatic firearms.

To understand what affects the pattern of cartridge case ejection.

To understand the limitations of ejection pattern analysis.

16.12 METHODS OF INSTRUCTION

16.12.1 LECTURE & DISCUSSION

Discuss with trainer when and why ejection pattern analysis is relevant for crime scene response.

Discuss with an experienced firearms examiner ejection pattern analysis and how it is conducted as a request for the laboratory examination. If possible attend an ejection pattern analysis exam and record cartridge case pattern.

16.12.2 SUGGESTED READING

Haag, Lucien C., “Shooting Incident Reconstruction” Elsevier, New York 2006 (chapter 12)

WSPCL Firearms Procedures Manual, section 1.24.

Assignment: Review a case file that included ejection pattern analysis.

16.13 MODES OF EVALUATION

Review of assignment.

Question and Answer Session.

LONG RANGE – DISTANCE SHOOTING

16.14 OBJECTIVE

To understand the difference between long range vs. short range trajectories.

To understand external and terminal ballistics.

16.15 METHODS OF INSTRUCTION

16.15.1 LECTURE & DISCUSSION

Discuss with the trainer the difference between long range and short range trajectory.

Discuss with an experienced examiner downloading ammunition, ballistic coefficient of projectiles, velocity, bullet mass, etc.

16.15.2 SUGGESTED READING

Haag, Lucien C., "Shooting Incident Reconstruction" Elsevier, New York 2006 (chapter 13)

Speer reloading manual, current edition.

Sierra Infinity ballistic program, current version.

16.16 ASSIGNMENT:

You will be given an exercise regarding a long distance shooting example. Determine angle of departure, angle of fall, distance of shot. Determine if the shot was possible given the defined parameters.

16.17 MODES OF EVALUATION

Review of assignment.

Question and Answer Session.

DOCUMENTING SHOTS INTO VEHICLES

16.18 OBJECTIVE

To understand how to measure and document bullet defect locations into a vehicle using the baseline and the squaring methods.

16.19 METHODS OF INSTRUCTION

16.19.1 LECTURE & DISCUSSION

16.19.2 SUGGESTED READING

Haag, Lucien C., Shooting Incident Reconstruction, Elsevier Inc., 2006; pp. 170 -171

Chisum, Jerry W., and Turvey, Brent E., Crime Reconstruction, 2nd Edition, Elsevier Inc., 2011; pp. 424 - 426

16.20 ASSIGNMENTS

Working with an experienced analyst, establish an internal baseline within a vehicle and practice locating and taking measurements of defects within the vehicle.

Working with an experienced analyst, square a vehicle and practice locating and taking measurements of defects on the vehicle.

16.21 MODES OF EVALUATION

Review exercises.

Question and Answer Session.

MODULE 16.0 SHOOTING INCIDENT RECONSTRUCTION CHECKLIST

DEFECT ASSESSMENT

Lecture and discussion Date Trainee's Initials

_____ _____

Date Trainer's Initials

_____ _____

The following exercise has been completed:
Shoot various types firearms at various targets at several angles. Record by written and photographic documentation of the defects produced.

Test several defects for copper and lead wipe. Also examine area surrounding defect for other gunshot residues.

Record the defects entrance and exit characteristics and whether the bullet defects penetrate, perforate, graze, or ricochet the target material.

Date Trainee's Initials

_____ _____

The Trainer has discussed the observations and findings of this exercise with the trainee:

Date Trainer's Initials

_____ _____

MODULE 16.0 SHOOTING INCIDENT RECONSTRUCTION CHECKLIST

DEFECT ASSESSMENT

The prepared material was evaluate for the presence of copper and lead, other gunshot residue, entrance and exit characteristics, etc.

Date	Trainee's Initials
_____	_____

All the exercises have been reviewed and are complete

Date	Trainer's Initials
_____	_____

A question and answer session was completed

Date	Trainer's Initials
_____	_____

Additional Comments:_____

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MODULE 16.0 SHOOTING INCIDENT RECONSTRUCTION CHECKLIST

DISTANCE DETERMINATION EVIDENCE

Lecture and discussion Date Trainee's Initials

_____ _____

Date Trainer's Initials

_____ _____

The following exercise has been completed:
Shoot a cloth target from several distances: contact, 6 inches, 12 inches, 24 inches, and 36 inches. Duplicate this exercise with folded fabrics, a pistol, rifle, and shotgun.
Date Trainee's Initials

_____ _____

Wrap a revolver in cloth and fire the revolver. Examine the residue pattern left on the cloth. Test the distance away the cloth needs to be before the pattern is not transferred.

Date Trainee's Initials

_____ _____

The Trainer has discussed the observations and findings of these exercises with the trainee:

Date Trainer's Initials

_____ _____

All the exercises have been reviewed and are complete

Date Trainer's Initials

_____ _____

A question and answer session was completed

Date Trainer's Initials

_____ _____

Additional Comments:_____

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MODULE 16.0 SHOOTING INCIDENT RECONSTRUCTION CHECKLIST

TRAJECTORY MEASUREMENTS

Lecture and discussion Date Trainee's Initials

_____ _____

Date Trainer's Initials

_____ _____

The following exercise has been completed:

Measure the locations of the defects and the horizontal and vertical angles of their trajectories on several mock walls that have been created.

Date Trainee's Initials

_____ _____

String a defect in tempered glass to locate the point origin.

Date Trainee's Initials

_____ _____

Review several complex trajectory crime scene cases. Discuss with you trainer how the scene was processed, results obtained and limitations of the scene.

Case Numbers_____

Date Trainee's Initials Date Trainer's Initials

_____ _____ _____ _____

All the exercises have been reviewed and are complete

Date Trainer's Initials

_____ _____

A question and answer session was completed

Date Trainer's Initials

_____ _____

Additional Comments:_____

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MODULE 16.0 SHOOTING INCIDENT RECONSTRUCTION CHECKLIST

EJECTION PATTERN ANALYSIS

Lecture and discussion Date Trainee's Initials

_____ _____

Date Trainer's Initials

_____ _____

Review a case file that included ejection pattern analysis. _____ _____

Case#_____

The exercise has been reviewed and is complete

Date Trainer's Initials

_____ _____

A question and answer session was completed

Date Trainer's Initials

_____ _____

Additional Comments:_____

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MODULE 16.0 SHOOTING INCIDENT RECONSTRUCTION CHECKLIST

LONG RANGE-DISTANCE SHOOTING

Lecture and discussion	Date	Trainee's Initials
_____	_____	_____
	Date	Trainer's Initials
	_____	_____

Determine angle of departure, angle of fall, distance of shot.
Determine if the shot was possible given the defined parameters. _____ _____

The assignment has been reviewed and is complete

Date	Trainer's Initials
_____	_____

A question and answer session was completed

Date	Trainer's Initials
_____	_____

Additional Comments:_____

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MODULE 16.0 SHOOTING INCIDENT RECONSTRUCTION CHECKLIST

DOCUMENTING SHOTS INTO VEHICLES

Lecture and discussion Date Trainee's Initials

_____ _____

Date Trainer's Initials

_____ _____

The following exercise has been completed:

Establish an internal baseline within a vehicle and practice locating and taking measurements of defects within the vehicle. Date Trainee's Initials

_____ _____

Square a vehicle and practice locating and taking measurements of defects on the vehicle.

Date Trainee's Initials

_____ _____

The Trainer has discussed the observations and findings of this exercise with the trainee:

Date Trainer's Initials

_____ _____

17.0 DAMAGE EVIDENCE

17.1 OBJECTIVES

To become aware of the potential for physical/fracture matches in damage evidence.

The recognition and preservation of various types of clothing/fabric damage.

The recognition and preservation of various types of glass damage.

The recognition and preservation of tape and ligature evidence.

The recognition and preservation of paint, polymer, and building material evidence.

The recognition and preservation of arson and post-blast explosive evidence.

The recognition and documentation of fiber-plastic fusions.

17.2 METHODS OF INSTRUCTION

Lecture and discussion with mentor and/or trace evidence examiner.

17.2.1 SUGGESTED READING:

Taupin, J. M., “Comparing the Alleged Weapon with Damage to Clothing-The Value of Multiple Layers and Fabrics”, Journal of Forensic Sciences, 1999; 44 (1), pp. 205-207.

Taupin, J. M. “Testing Conflicting Scenarios-A role for Simulation Experiments in Damage Analysis of Clothing”, Journal of Forensic Sciences, 1998; (4), pp. 891-896.

Costello, P. A. and Lawton, M. E., “Do stab-cuts reflect the weapon which made them”, Journal of Forensic Science Society, 30 (2), 1990, pp. 89-95.

Saferstein, R. Forensic Sciences Handbook, Prentice-Hall, Inc. 1982, 146-152 glass fracture; 223-225 &237-238 arson; 241-243 explosives.

Fisher, Barry A. J., Techniques of Crime Scene Investigation, 7th edition, CRC Press, 2004; 287-310 arson & explosives

Houck, M. More Cases in Mute Witnesses: Trace Evidence Analysis, Elsevier (2004), 53-88.

Gardner, Ross M., Practical Crime Scene Processing and Investigation – Practical Aspects of Criminal & Forensic Investigations, Chapter 11-Special Scene Considerations.

17.3 ASSIGNMENTS

Review two physical/fracture match case files.

Review two clothing damage case files.

Observe plate, laminate, and tempered glass being subjected to multiple bullet impacts (in person or via photos and/or video). Write answer to the following questions:

- What are the differences between the types of glass?
- Can directionality of breakage be determined and how?
- Can the multiple shots be sequenced and how?

- How should a fractured window be preserved for analysis?
- When appropriate, what evidence and controls should be collected?

Remove and properly package the following types of ligatures from a dummy or volunteer: adhesive tape, knotted cord/rope, zip tie.

Collect and properly package paint damage sample(s) and appropriate control(s) from the following painted surfaces: metal, concrete, wood, and plastic.

Review an arson or post-blast explosion crime scene case file.

Create a fiber-plastic/rubber fusion and/or impressions using a metal hammer, fabric, and a plastic and/or rubber surface(s). Record your observations with notes and appropriate photographs.

17.4 MODES OF EVALUATION

Review assignments.

Question and answer session.

MODULE 17.0 DAMAGE EVIDENCE CHECKLIST

Lecture and discussion	Date	Trainee's Initials
_____ _____		
	Date	Trainer's Initials
	_____	_____

The following assignments have been completed:	Date	Trainee's Initials
Review two physical/fracture match case files.	_____	_____

Case#_____

Case#_____

MODULE 17.0 DAMAGE EVIDENCE CHECKLIST

The following assignments have been completed:	Date	Trainee's Initials
Review two clothing damage case files.	_____	_____
Case#_____		
Case#_____		
Remove and properly package the following types of ligatures from a dummy or volunteer: adhesive tape, knotted cord/rope, zip tie.	_____	_____
Collect and properly package paint damage sample(s) and appropriate control(s) from the following painted surfaces: metal, concrete, wood, and plastic.	_____	_____
Review an arson or post-blast explosion crime scene case file.	_____	_____
Case#_____		
Create a fiber-plastic/rubber fusion and/or impressions using a metal hammer, fabric, and a plastic and/or rubber surface(s).	_____	_____

The assignment has been reviewed and is complete

Date	Trainer's Initials
_____	_____

A question and answer session was completed

Date	Trainer's Initials
_____	_____

Additional Comments:_____

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18.0 RECOVERY AND PROCESSING OF HUMAN REMAINS

18.1 OBJECTIVES

Learn how to recognize a burial site.

Learn to process, document, and recover buried remains.

Learn the effect of environmental factors on buried remains.

Learn to recognize Native American burial grounds.

18.2 METHODS OF INSTRUCTION

Lecture and Discussion

18.2.1 SUGGESTED READING

Bass, WM. 1995. Human Osteology: A Laboratory and Field Manual. 4th Edition, Columbia, MO: Missouri Archaeological Society.

"Archaeological sites and resources, “Revised Code of Washington (RCW) 27.53"

“Department of archaeology and historic preservation” RCW 43.334

Skeletal human remains—duty to notify—ground disturbing activities—coroner determination definitions” RCW 68.50.645

Dupras, T.,Schultz, J.,Wheeler, S.,Williams, L., Forensic Recovery of Human Remains. 2nd edition, CRC Press, 2012

18.3 ASSIGNMENT:

Process, document, and recover previously buried remains. Appropriately photograph, measure, document, and collect what you find. Collect appropriate soil, botanical, fauna, and entomological samples. Record appropriate environmental information.

18.4 MODES OF EVALUATION

Review assignment.

Question and answer session.

MODULE 18.0 RECOVERY AND PROCESSING OF HUMAN REMAINS CHECKLIST

	Date	Trainee's Initials
Lecture and discussion	_____	_____
	Date	Trainer's Initials
	_____	_____

Process, document, and recover previously buried remains. Appropriately photograph, measure, document, and collect what you find. Collect appropriate soil, botanical, faunal, and entomological samples.	_____	_____

The assignment has been reviewed and is complete

Date	Trainer's Initials
_____	_____

A question and answer session was completed

Date	Trainer's Initials
_____	_____

Additional Comments:_____

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19.0 HIGH DEFINITION SURVEYING (HDS)

19.1 OBJECTIVES

To become familiar with the operation of the Leica ScanStation C10, P20, and/or P403D laser scanner.

To become familiar with the operation of the NCTech iSTAR Fusion camera.

To become familiar with the operation of Leica Cyclone software.

To become familiar with the operation of the IMS Map360 software.

19.2 METHODS OF INSTRUCTION

19.2.1 LECTURE AND DISCUSSION

Benefits of laser scanning at crime and crash scenes

a. Large quantity of measurements in short time period
b. Quality, or accuracy and precision of measurements
c. Non-intrusive remote capability avoids contamination/ hazard issues
d. Objectively captures all measurement data in field of view
e. Eliminates need for manual sketch and measurement activities

HARDWARE LECTURE AND DEMONSTRATION

Demonstrate the setup and tear down of the scanner

Demonstrate target configurations

Demonstrate setup of the NIST traceable twin-target pole

Demonstrate basic and advanced scanning techniques

Demonstrate the setup of the iSTAR camera

19.3 EXERCISE:

1. Scanning the scene from multiple positions (scan worlds)

a. Complete target all scan and image (using iSTAR camera)
b. Acquire and store targets
c. Complete high resolution scans of selected areas within overall field of view
d. Takedown scanner and reposition to new scanner position
e. Complete target all scan and image (using iSTAR camera)
f. Acquire and store targets
g. Complete high resolution scans of selected areas within the new positions field of view

19.3.1 SOFTWARE LECTURE AND DEMONSTRATION

Demonstrate how to download data and create a database

Demonstrate target registration and cloud-based registration

Open a ModelSpace view and demonstrate its functions

Open a KeyPlan and demonstrate its functions

Open a TruView and demonstrate its functions

Import and apply panoramic images from the iSTAR camera

Review the demonstration tutorial videos

Create a 2D diagram in IMS Map360

19.3.2 EXERCISE

Create a finished work product from the data supplied.
a. Download the data and create a database
b. Register the clouds via target registration
c. Register the clouds via cloud to cloud registration
d. Create a ModelSpace view
e. Import and apply panoramic images
f. Create KeyPlan from a ModelSpace view
g. Create a TruView
h. Create a 2D diagram in IMS Map360

19.3.3 SUGGESTED READING

Leica Geosystems Four Day Public Safety & Forensic Training Level I manual

Leica ScanStation C10, P20, and/or P40 manual

NCTech iSTAR Fusion manual

Crime scene procedures manual – section related to HDS

19.4 MODES OF EVALUATION

Review exercises and assignments

Question and answer session

TRAINEE HDS OPERABILITY COMPETENCY

Scan and image one indoor mock crime scene with at least one trajectory, 2 pieces of evidence, and a twin target pole as if it were a crime scene. The trajectory and evidence items must be scanned at a higher resolution. At least two ScanWorlds must be captured.

The trainer will evaluate the trainee's competency and provide written feedback.

Note: formalized documented training provided by an external agency may be substituted for the training portion; however the HDS operability competency will still need to be completed as listed above.

TRAINEE HDS SOFTWARE COMPETENCY

Scan and image one indoor mock scene with at least one trajectory and 2 pieces of evidence as if it were a crime scene. At least two ScanWorlds must be captured. Verify digital measurements with hand measurements of the scene. Prepare one TruView work product.

Create a 2D IMS Map360 diagram of the scene.

Properly store all the digital data on a labeled disc(s).

The trainer will evaluate the trainee's competency and provide written feedback.

Note: formalized documented training provided by an external agency may be substituted for the training portion; however the HDS software competency will still need to be completed as listed above.

MODULE 19 HIGH DEFINITION SURVEYING CHECKLIST

Completed:

Lecture, Discussion, and Demonstration	Date	Trainee's Initials
	_____	_____
	Date	Trainer's Initials
	_____	_____

The following exercises have been completed:	Date	Trainee's Initials
Equipment set up and takedown	_____	_____
Scanning exercise	_____	_____
Use of Cyclone software	_____	_____

Evaluation completed:

Question and answer session

Date_____ Trainee's Initials_____

Date_____ Trainer's Initials_____

Trainee HDS Operability Competency

Date_____ Trainee's Initials_____

Date_____ Trainer's Initials_____

Trainee HDS Software Competency

Date_____ Trainee's Initials_____

Date_____ Trainer's Initials_____

Additional Comments:_____

_____

_____

20.0 CRIME SCENE REPORTS AND CASE FILE MANAGEMENT

20.1 OBJECTIVE:

To write crime scene reports

20.2 METHOD OF INSTRUCTION

Lecture and Discussion

20.3 ASSIGNMENT:

Review at least 5 different crime scene case files prior to writing a first report.

MODULE 20.0 CRIME SCENE REPORTS AND CASE FILE MANAGEMENT CHECKLIST

Lecture and discussion	Date	Trainee's Initials
_____	_____	
	Date	Trainer's Initials
	_____	_____

Review at least 5 different crime scene case files prior to writing a first report.

Case#_____	Date	Trainee's Initials
Case#_____	_____	_____
Case#_____		
Case#_____		
Case#_____		

Additional Comments:_____

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21.0 COMPETENCY TEST

21.1 OBJECTIVE

To be become a Primary Responder

21.2 METHODS OF INSTRUCTION

Complete a mock crime scene which may include, but not limited to, the following items for identification, documentation, and collection:

- Ammunition
- Trajectory
- Bloodstain Pattern
- Latent prints
- Damage evidence

21.3 MODES OF EVALUATION

Review the photographs, notes, and processing of the mock crime scene.

MODULE 21.0 COMPETENCY CHECKLIST

The Mock Crime Scene has been completed: Date _____ Trainee's Initials _____

The Mock Crime Scene photographs, notes, and processing have been reviewed

Date _____ Trainer's Initials _____

An oral/written exam completed.

Date _____ Trainer's Initials _____

Additional Comments:_____

22.0 TECHNICAL REVIEW

22.1 OBJECTIVE:

To become eligible to technically review crime scene reports

22.2 METHODS OF INSTRUCTION

Lecture and Discussion

22.3 ASSIGNMENT

Before a primary responder is signed off for technical review, he/she will conduct at least 3 co-technical reviews.

22.4 MODES OF EVALUATION

Each co-technical review will be evaluated; written feedback will be provided to the CSRT Manager either recommending the trainee for sign-off or recommending additional co-technical reviews to gain proficiency in technical review.

MODULE 22.0 TECHNICAL REVIEW CHECKLIST

Lecture and discussion	Date	Trainee's Initials
_____	_____	_____
	Date	Trainer's Initials
	_____	_____

Perform at least three co-technical reviews:

Case Number	Date	Co-technical reviewer's name
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Additional Comments:_____

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